
TECHNOLOGICAL
SOVEREIGNTY
2
#IRC
COOP

This book is dedicated to

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Technological Sovereignty

Vol. 2

Technological sovereignty Vol.2

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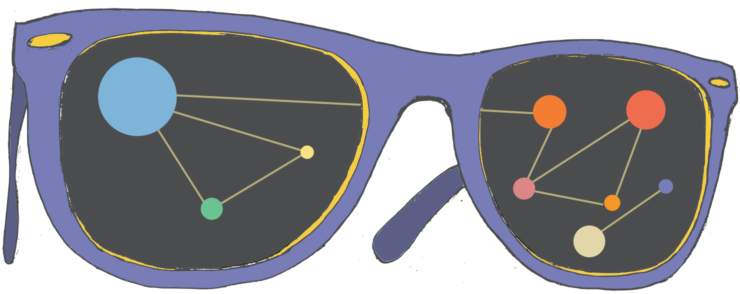
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Technological Sovereignty: What are we talking about?

Margarita Padilla



What is technological sovereignty?

Dear Reader, we would like to talk about technological sovereignty, a concept that perhaps still means nothing to you.

Wikipedia says that "sovereignty" is the supreme political power, to be sovereign is to have decision-making power, the power to make law without receiving it from another. It also says that it is impossible to understand this concept without taking into account struggles for power: history defines the question of sovereignty, what it is and what it will become, and at any given moment, who is sovereign.

Transferring the question of sovereignty to technologies, the question we wish to discuss becomes, who has the power to make decisions about them? About their development, about their use, about access and about distribution, about supply and consumption, about the prestige they have and their power to fascinate…

I believe that, with questions of power, there are no simple answers. Nevertheless, there are desirable and desired horizons. With this publication we hope to pause and think about the technological horizon we are projecting, to apply critical judgement and, above all, to share our ideas.

In informal conversations about technologies, friends often say things like "I just don't understand that", "I'm not very good at that"... So I try to shift the focus towards another, more political terrain. I firmly believe that what a single person knows or does not know is not really such a significant part of an overall approach to technologies.

This shift is already being applied in other areas. For example, I don't need to personally understand chemistry to

"know" that the air is contaminated. I say "know" in inverted comas because I don't really know it, in the scientific sense of the word, because I have never myself conducted an atmospheric contamination analysis. However, I do "know" it in social terms, because many groups and individuals that I trust have told me. For me, the belief that the air is contaminated is a social truth.

Something similar occurs with organic food. I don't need to go to each and every organic producer to conduct chemical analysis of the nutritional value of their produce. There is a chain of trust, a circuit that makes what I personally know or do not know irrelevant. I base my ideas on what this shared knowledge presents as social truth.

In the same way, my horizons in terms of technological sovereignty are not made up of self-sufficient individuals who control every last detail of their devices and the programmes on their computer or mobile phone. It is not technological individualism (as I understand it, I know, I keep saying I...). I don't believe that the subject of technological sovereignty is the individual (you know, that young, handsome, intelligent, successful, white man... above all, because he does not exist).

Where does it happen

As with all other sovereignty, technological sovereignty is made in communities.

Communities exist, and they are everywhere, unceasingly creating and recreating themselves. Shared flats, neighbourhoods, friends, workmates, professional networks, extended families... Communities are everywhere.

As with any symbolic construction, communities are not something you can see with your eyes. They are something you see with your mind, and feel the bonds with your heart.

This means that in the same situation, a community can be very real and active for some people, yet totally invisible to others. This is a real problem because if you don't see where communities are walking, you run the risk of trampling them. Although often the tech industry does not aspire to trample communities, but to control them.

For those of us fighting for technological sovereignty, communities are a tangible reality. They are there, we see them and we feel them. Although technology is stereotypically related to consumerism, elitism, luxury goods and isolated individualism, this is only the vision presented by the industry and the market. A market that seeks to isolate and bewilder consumers.

All technology is developed in community. These communities can be more or less autonomous, or more or less controlled by corporations. The struggle for sovereignty, is about these communities. Nobody invents, builds or codes alone, quite simply because the task is such that it would be impossible.

The premise of a community that aspires to be sovereign is that all knowledge should be shared, and all individual developments should be returned to the commons. Knowledge grows through cooperation. Intelligence is collective, and to privatise knowledge is to kill the community. The community is the guarantor of liberty, which means it is the guarantor of sovereignty.

The relationship between communities and knowledge has a long history, and it was not born of new technologies.

For example, in a culture where women are responsible for attending during other women's births, conserving and transmitting knowledge about birth becomes fundamental for the reproduction of life. This means that there will be a community of midwives, that can be more or less formalised, or, to put it another way, community relations will form between midwives that relate to the preservation of practical knowledge. If some power wishes to destroy this community (this sovereignty), one way to do it would be to "destroy" the knowledge held in common by that community, making it seem useless, ridiculous or out of date. This could be done through policies that "shift" this knowledge into hospitals and into the hands of conventional medicine. If women go to give birth in the hospital they are attended by doctors, and the community of women is weakened or disappears altogether (it loses its sovereignty).

Briefly expressed, community, in its most radical form, is autonomous, self-organised and self-regulated, and it is the guarantor of sovereignty. If you have a community you will have freedom and sovereignty. Or even further: it is only within communities that we can be free and sovereign peoples.

I hear you say "but poor me, I don't have the time or the money, and I don't understand technology, and I already have thousands of other problems in my life... how can I join a community to make technologies?".

To "join" a community does not necessarily mean becoming a coder, or going to meetings, or taking on responsibilities. Communities are generous. There are different levels of involvement and different ways to contribute.

This book aims to offer clues about things you can do,

and we will suggest some of them below. However, there is one that is more important than the others. It does not take time, or money or knowledge. Just good intentions.

You can adopt a stance that contemplates the value of the community.

Continuing the example of the destruction of the community of midwives, it supposes that there is a social perception that their knowledge has value. The power that aims to break up the community of women must make propaganda to devalue the community and give value to the knowledge of the doctors in the hospital. We all participate in the social perception of value and how valuable something is. The individual decision a women makes between going to a hospital to be treated by a doctor, or giving birth at home being cared for by another woman, is taken in a social context that will "judge" (assign value to) one or other decision as being the "right" one.

We are not talking about economic, practical, commercial or market value, we are talking about social value. If you contemplate value, you are giving and taking value.

For example, although men will never give birth, their vision of the value of the community of women attending births is very important. If they take the position of seeing its value, they are giving that community more legitimacy and more sovereignty.

Therefore, in addition to all the practical things that you can do, your point of view can make the communities stronger, and in that way, you are already contributing.

Why is this important?

Antonio Rodríquez de las Heras says that technology is

to culture what the body is to life.

Just as the human body protects genetic life (the "first" life), technology protects cultural life as it emerges from human beings (the "second" life).

Just as the human body, with its marvellous complexity, is an impressive adventure over thousands of millions of years, that began when a tiny membrane began to protect a genetic message in the most changeable of environments; so technology is developed and grows more complex to protect this other vital message that is born of human beings: that of culture.

Technology, from fire or flint to the monumental constructions that we use everywhere, almost without noticing, is the body of culture. Without technology, there would be no culture.

The relationship with technology is paradoxical. It allows you to do more things (autonomy), but you depend on it (dependence).

You depend on those who develop and distribute it, on their business plans or their contributions to social value. And you change with it. Are Whatsapp and Telegram not changing the way we relate to each other? Is Wikipedia not changing culture of the encyclopedia? And you change it too, in turn.

Which is why it is so important to keep open the collective question about what technological horizons we desire and how we are building them.

How to value it

In the boom of the financial crisis and a culture of obligatory business ventures, the technology industry, on which

the power of communities is not lost, began to use participatory architectures to take advantage of collective intelligence and obtain market value.

This market supply deals all the time with other styles of cooperation, in a hot-bed of tendencies that mark the episodes in the struggle for technological sovereignty.

The technology industry wishes to naturalise its preferred choices. It wants you to stick to its products and services without asking questions.

Thus, to resist technological submission, I propose that in your technological choices, you value the following:

Comfort should not be the only criteria. It is more comfortable not to separate your garbage. It is more comfortable to take the car and drive around the corner (assuming there will be parking, of course). It is more comfortable to eat fast food... However, we don't always do that, because comfort is not always the best criteria. And with technologies it is the same.

Be aware that gratitude is not the only cost. It is good that there are free public services, which is a way of saying that they are paid for by everyone, in a common fund. It is also good to exchange gifts, for free, that we pay for as a way of showing gratitude and love. However, when we talk about technology industries, free is just a strategy to get greater profits by other means. Such freeness comes at a high cost, both in terms of loss of sovereignty (as we remain at the mercy of whatever industry wants to "give" us in any given moment), but also in environmental and social terms. Saving a photo in the cloud, to give a simple example, has environmental and social costs, since in order to save it there must be a server on at all times, the "motors" of which consume electrical energy, etc. That server perhaps belongs

to a company that does not pay taxes in the place where the person saved the photo lives, and is therefore extracting value without contributing to the commons, etc. Everything costs something. We should therefore perhaps think of this kind of “gratuity” as indirect costs that will hit somewhere else.

What can you do

No one lives in absolute technological sovereignty. Sovereignty is a road to be walked. However, we cannot accept that, since we cannot do everything, we should not do anything.

There are many things you can do. Of course, you could use more free software. In this publication you will find many proposals for free programmes that function perfectly. You could also actively participate in a community. However there are many other things you can do:

If you have concerns about your technological practices, share them, discuss them, help them to circulate. Technological practices are not individual issues. They have a social dimension that we should make into an issue. Technologies should be on the collective agenda, just like health, work or political participation. We need to talk about technologies.

If you are part of a group, don't assume that all the members are willing to use all the computer programmes or internet services that you use. When I participate in a group and, without any discussion, someone proposes we have a Skype or a Hangout, I realise that the person proposing it has not considered that there might be people who don't want to open a Skype or Gmail account. It is as though we

wanted to force vegetarians to eat meat because it is more comfortable (or cheaper or whatever) to make a single plate according to the criteria of the acritical majority. That would be unacceptable, no? Well, in the same way, someone can refuse to use (or be used by) certain services. It is their right. The decision about which technologies to use is not only practical, it is also ethical.

If you are an educator, transmit the values of free software. Why should we pirate what communities already offer us and that we can share freely? Free software is the software that practices and defends the values of the community. If we like public education because it is the commons, should we not want public schools to use public computer programmes, without licensing costs and privatization mechanisms? Public is not the same as free.

If you have the power to make contracts (such as for the website of your association), seek out companies in the social economy that are contributing to the communities. Put the money that you spend on technologies into circulation in the communitarian social circuits. In this book you will find a chapter dedicated to the cooperatives that recombine social and solidarity economies with technological sovereignty. These cooperatives are grouped in networks of social economy or local social markets. The groupings have websites where you can find cooperative companies to take on your work.

If you can programme activities (within your association, social centre, PTA...), organise awareness raising talks, workshops or trainings about technological sovereignty. This is an endless task, that should be ongoing, because nobody is born with this knowledge. If you don't know who

could give these talks or workshops, ask the cooperatives. They will know who could do it. As we have already said, we need to talk about technologies.

If you have prestige or influence, make technological sovereignty a relevant issue on political and critical agendas. If you don't, read up on the issue in the sections that many newspapers already have about technologies. Talk to people about what you have read. Make it an issue. Seek out critical and reflective perspectives. It is not about chasing the ultimate market tendency, but rather a question of keeping up to date in the many ongoing political and social debates about technological sovereignty.

If you have the energy or the capacity for leadership, promote the creation of groups to fiddle with things, exchange knowledge, and enjoy technology in company. Technologies are also a source of happiness and pleasure. There are groups that meet to repair electronic toys or small white goods. Others meet to do sewing with free hardware components (electronics). Others do creative programming... Technologies are not only for hard work or for isolating people. As we have said before, they are the body of culture. And culture is far more than just work.

If you are a woman, seek out other women to ask questions together, about how gender constructions are separating us from active, creative and leadership relationships with technologies. The active presence of women in the construction of technological sovereignty is scarce. There is a lot of work to be done there. In this book you will find some references, in the women who wrote some of the chapters.

And if you do not know where to start, seek help. In ad-

dition to all the people you know personally, these days we can enter into communication with people we don't know. If you see a video that interests you or an article you would like to go into in more depth, it is likely you can send a mail to the author. Even if we don't know each other, we can help each other.

We have edited this publication with the intention of digging deeper into the diversity and richness and the current situation of technological sovereignty around the world, to present its potential and the difficulties faced.

We hope you find it interesting and that you read it critically, and help us to improve and distribute it.

Technological Sovereignty:
Learning to love machines again

Alex Haché



The great velvet ball meets the needs of a neighbourhood or a community: It/she is pink and very nice but it has no mercy. The people think the ball does not see evil, and that they will be safe, but it knows very well. It invented it. The ball rrrrumbles as it rolls. It invented it.[1]

Science fiction narratives build possible futures, multiverses, and generally they build on what has not (yet) come to be. Each time an "activist imagines the world they are fighting for: a world without violence, without capitalism, without racism, without sexism, without prisons, etc. they are developing a speculative fiction"[1]. Narratives that unite us in our circles of affinities and resistance. Narratives that allow us to assault "the machine"[3] and start an exodus within it. Exercising our capacity to speculate about new, utopian worlds is a proposal for together rethinking evil_electronics, evil_internet, evil_mobile 'phones, evil_satellites.

Giant balls of pink velvet that you can no longer ignore. Discovering new forms, naming them, dreaming of other, possible technologies. Technological sovereignty advances because it is, at once, desire, speculative fiction and alternative realities.

A 45-year-old father and his 20-year-old son. They seem to have a good relationship. The son asks his father to film him with his mobile 'phone, doing something in the sea. Once, twice, thrice, four times. His father cannot do it and the son is patient, but surprised at his incompetence. Suddenly the father explodes. The beach is silent.

They shout about the rupture of relationships of trust,

disgust and fear of Facebook and mobile 'phones. The son promises to accompany his father better, so he will no longer be inept, he will become like an alien, typing with all ten fingers. Analogue generations with specific neural branches, experimentation and knowledge in three dimensions. This conversation made me feel alone. I wanted to join in. I wish these explosions of rage happened more often. I want to see more people armed with bowling balls smashing the iphones in every apple store [4].

We should have other technologies, something better than what today we call "Information and Communications Technologies" (ITCs). A mobile phone is a computer, the computer is already obsolete, dark-screened tablets, watches connected to the internet that count you while you run, menstruate and fuck. Devices populated by apps and "services" that underrate us. "Long live evil, long live capital!" - La bruja avería[5] as the incarnation of the Cassandra syndrome[6].

We have to confront conversations that tend towards zero comprehension of how chilling a future where machines have achieved singularity would be[7]. We must fight against the arguments put forward in our communities and collectives; by friends; in our networks of trust; and in parks, dinner halls and schools; in social services and hospitals: "it's so practical and comfortable", "there is no alternative", "I have nothing to hide" and "what does it matter if they are watching us/controlling us? Everything is a disaster anyway".

Our common spaces are fed by a lack of originality, born of the neoliberal narratives that accompany each and every new, commercial technology, as they colonise our minds

and our desires.

We need to talk a lot more, here and now, about the psychological, social, political, ecological and economic costs of these technologies. Not about the freedom to take selfies in the Google, Amazon[8] Facebook, Microsoft and Apple shopping malls, and upload yet another photo to an instasheet account; but about repression, control, surveillance and the quantification and discretization of life and resources. In order to have this conversation we call on those of you who are exploited, sent mad, driven to suicide[9], or killed in the femicides in the borderlands or in the special economic zones, fodder for a dystopian global technological ecosystem.

The Technological Sovereignty (TS) that we want is one which designs, develops, distributes and dreams technologies that offer well being and good living, those which do not perpetuate or create more injustice. It creates its own version of the ethical and political food sovereignty revolution, which seeks the production and consumption of fair and local food. We can learn from this analogy, and food sovereignty -v- technological sovereignty was what we talked about in the first volume.

In this dossier, we continue to present examples of TS, understood as a speculative fiction applied and situated to create social and political change. The various contributions present the inherent tensions that exist between autonomy and sovereignty, contribution and sustainability, appropriation by capitalism -v- evolving, appropriate and feminist technologies.

On the way we lost two important contributions.

One article about the ex-centric self-organisation of

health, the decolonisation of our bodies and the field of experimentation around technologies for health, sexuality and care: TS cannot only be software and hardware, it must also be wetware as a space for resistance[10] against the pharma-medical industrial empire.

We also wanted to go into the little-known history of a number of visionaries of TS in greater depth. From a perspective of curiosity and rebellion they have made the Internet reach places where it was not supposed to reach, to defy the apartheid state, reinforce clandestine communities, and show that it is possible to create beautiful technologies, adapted to their environment. Voja Antonic[11] (Yugoslavia), Roberto Verzola[12] (Philippines), Onno Purb[13] (Indonesia) and Tim Jenkin[14] (South Africa) have been very generous in sharing their context, motivations and inspirations with us. They have shown us that TS is made up of many layers, affiliations and imaginations.

In terms of how the TS panorama has evolved since the last book, we would highlight the following:

Today, everybody uses open source code, including Fortune 500 companies, governments, major software companies and start-ups. Sharing, rather than building proprietary code, turned out to be cheaper, easier, and more efficient. This increased demand puts additional strain on those who maintain this infrastructure, yet because these communities are not highly visible, the rest of the world has been slow to notice. Most of us take opening a software application for granted, the way we take turning on the lights for granted. We don't think about the human capital necessary to make that happen. In the face of unprecedented demand, the costs of not supporting our digital infrastructure are numerous.

This research, entitled Roads and Bridges[15], highlights

how large companies are taking advantage of the digital commons and giving little or nothing back in return.

In the previous book we already indicated that being part of the free-software/open source world was not enough to make TS. Similarly, being part of TS does not necessarily mean that all the participants are working together to develop liberating technologies. TS initiatives need to build more just and sustainable communities, where all the participants know how to work with diversity and inclusion, and with an understanding of privilege and power dynamics.

The Coconut revolution[16] and the ecology of freedom according to Murray Bookchin reminds us that appropriated technologies are the ones that are developed in a community that chooses the level, or grade, of technologies it needs, and takes into account the development processes and ways of doing things, in order to advance towards liberating technologies.

With these ambitions, we highlight new contexts in which the concept of TS has become popular. For example, the Framasoft association in France has developed an ambitious plan of action to de-googlize[17] the internet, and their book Digital: taking back control[18] relates resistance practices that combine sovereignty, autonomy and new forms of collaboration. In Catalonia there have been Technological Sovereignty congresses[19], the Anti Mobile Congress[20] and the Social Mobile Congress[21]. These events raise awareness and create action networks to develop technologies based on different paradigms.

The concept of TS has also been taken up by some public institutions related to the "rebel municipalities"[22]. The promotion of hybrid public-civilian formats that offer more support to TS might ring alarm bells, but it could be a call

for celebration.

Imagine if public money were freed up to maintain our digital infrastructures and offer, for example, alternatives to Google services from a non-commercial perspective, hosting data in a decentralised way in architectures that incorporate the right to privacy and encryption by default into their
design. This could be a line of action where the public administration and civil society could mutually support each other.

For that we must offer more support to the small and medium-sized communities that develop appropriated technologies and TS, so that they can continue to provide technologies to those communities that need them. Technologies that are as beautiful and unique as multicoloured butterflies. A powerful example of that is the work of Atelier Paysan[23] ("the farmer's workshop"), a network of farmers that has spent years designing machines to work the land and the fields, exchanging their designs and knowledge.

In any case, for these alliances to function, the institutions need to lose the disdain they feel for small initiatives developing grassroots TS. To achieve TS we need to call on and involve all levels: the micro, the middle and the macro.

The future does not look good, and that is why we believe that TS can help us to counter the individualism encouraged by global capitalism.

No one should feel alone. No one should feel they are going through it alone. Friends are scared, anxieties are on the rise, and the space for freedom is shrinking. At the same time, unconnected people converge in a cold, grey place,

supporting an initiative for local computing. They want to understand what is happening, sit down with us to talk about technologies, share their practices, formulate their questions, exorcise their fears. This is happening in many places.

There are more and more messages arriving calling for ways to get past connected violences. They have taken down my web page, censured the content, harassed, insulted, blackmailed... The attacks are incessant, boring, dangerous, creative. There is no longer freedom of expression on the internet, only levels of privilege when it comes to being able to shout the loudest.

This is what we said to each other some months ago when I met with some dear friends to think about how to approach the issue of appropriated technologies together, as a resonating echo of that utopian horizon towards which we want to walk. We still want to go to that place where they speak unknown languages, vocabularies that do not exist, grammars that don't fit together.

To be able to name phenomena that are not yet among us, but which prefigure us, and sometimes, transfigure us. Our narratives become speculative fiction, generating ideas and memes that travel across time and space to become an alternative technological ecosystem, in which we don't have to sacrifice our fundamental rights: freedom, privacy, security, communication, information, expression, cooperation, solidarity, love.

"A self-fulfilling prophecy is a prediction that, once made, is, in itself, the cause of making it become a reality."

They feed us with dystopian futures: news, series, films and books from the society of the spectacle. These pierce us and paralyse us, we only see blurry images of gadget technology. The shitty future is now, which means we believe that the only way open to us is to sacrifice our freedoms to feed a technological machine that speaks to us of innovation, creativity and participation to improve their power to quantify us and turn us into singular units, parts of social groups within patterns that no one understands any more. Closed algorithms processing inside proprietary black boxes are demonstrating their growing capacity to influence us.

Dystopia is easy. Its perversity lies in its lack of imagination, and its potential to create culture and representations of the future based on negative loops: more discrimination, more machine singularity, more injustice based on algorithms, the *new weapons of math destruction*[24]. Dystopia closes us into a great loop of cynicism and the belief that technologies are what they are and that we can do nothing to have others. These narratives are self-fulfilling prophesies and it has been more than proved that if we call on the Terminator[25] in the end he will come.

The Internet is dying, the *world wide web* is shrinking. In my self-prophesizing utopian fiction there are worlds that reconnect thanks to the electromagnetic spectrum, waves that vibrate around us and are part of the commons. People rethink the technological infrastructures that they need, they develop them, audit them, test them, maintain them, transform them and improve them.

I wake up in the morning, the smartphone no longer sleeps at my side, almost no wifi passes through my house. The coffee machine and the refrigerator are free from the

internet of things, they do not connect to Starfucks + Monosanto to send my consumer data. On the table there is a tablet built to last for life. All my devices are encrypted by default and come from a local factory a few kilometres away.

Some years ago, some *biohackers* popularised the use of bacteria and trace elements for storing digital information. Moore's law was broken. Planned obsolescence was made illegal. The cycles of war, hunger and injustice created by the extraction of minerals and the mass production of technologies, gradually disappeared. At school we generated encryption keys: in Primary School using antiquated technologies like GPG, and later using processes based on the analysis of our sound imprint when having an orgasm.

I can configure my own algorithmic agent so my data will only be shared with who I wish it to be shared with. The friends of my friends make up a network of networks of trust and affinity; between us we often meet to share our ideas, resources and needs. I activate my wind, light and water capturers in order to generate all the energy I can. This lifestyle frequently requires my presence away from the screen; I am not always connected. There are no longer technophobes and technophiles, because no one gives technology that much importance any more. It has gone back to the place it should never have left.

There are so many worlds left to be created. To bring down the alien capitalism we must imagine futures that are not dystopian, futures where playing at creating our appropriated technologies is something common and happily mundane.

1 Speculative fiction workshop on feminist technologies, organised by Cooptecniques during the 2017 edition of Hack the Earth in Calafou (http://cooptecniques.net/taller-de-escritura-especulativa-tecnologias-feministas/)

2 Octavia's Brood: Science Fiction Stories from Social Justice Movements, Walidah Imarisha, adrienne maree brown, editors.

3 Sal de la máquina. Superar la adicción a las nuevas tecnologías, Sergio Legaz, author and Miguel Brieva, artist and member of the editorial council of Libros en acción.

4 https://www.youtube.com/watch?v=vNWAFApQDIc

5 La Bruja Avería ("The breakdown witch") is a character from the 1980s spanish children's TV show La Bola de Cristal (The Crystal Ball) which contained frequent puns about electronics and anticapitalist slogans. See :https://www.youtube.com/watch?v=RnOBdhi3hnE

6 https://www.youtube.com/watch?v=0jFpPN2xmSI

7 https://en.wikipedia.org/wiki/Technological_singularity

8 Amazonians speak about amazon, https://bestbits.net/amazon/

9 Foxconn, The Machine is Your Lord and Your Master, https://agone.org/centmillesignes/lamachineesttonseigneurettonmaitre/

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24 Cathy O'Neil: Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy, 2016

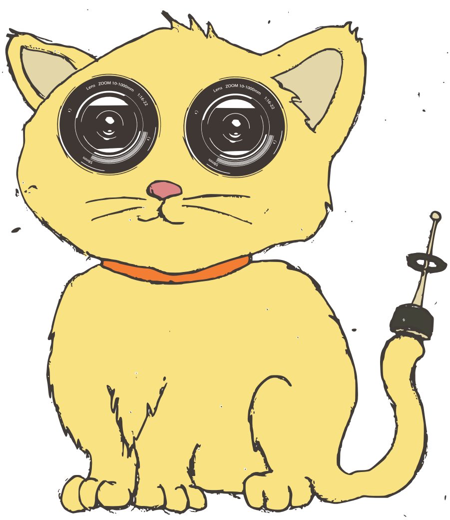
25 http://terminatorstudies.org/map/

Part 1:

Characterising Technological Sovereignty initiatives

Code is political, algorithms are weapons of math destruction[1]

Benjamin Cadon



We hear a lot about them, but we never see them. What are these algorithms? These invisible and tantalizing creatures that slip into our minds and inhabit our pockets. What are their intentions?

Formally speaking, an algorithm is nothing more than an inoffensive series of operations fed by data to produce a result. Nevertheless, they automate the resolution of a set of complex problems[2] and that is how some of them become high level Artificial Intelligence, thanks to companies that stuff them with data, kindly provided by us for free.

A bestiary[3] of algorithms

There is no comparison for knowing what they eat and identifying and better understanding their role in a society of informaticized humans. They were not born of an electrical spark at the bottom of a sulphurous sea of data. Their progenitors are the human beings who write the lines of code that produce a programme that carries within it a political and social project dictated by a public or private sponsor.

Algorithms are never "neutral" or impartial. They focus on carrying out the mission assigned to them, usually by western males from the higher classes, cradled by capitalism.

It is also important to mention that a stupid algorithm fed with lots of good data will be more successful than the famous artificial intelligence, even if the latter has sharper claws. How can we not cite those American ogres, the GAFAM (Google, Apple, Facebook, Amazon and Microsoft) or BATX, their alter-egos on the other side of the Pacific (the

Chinese giants: Baidu, Alibaba, Tencent and Xiaomi). Their metabolism is based on the collection, with our help, of the maximum amount of data about our smallest acts and gestures, "increasing" our day-to-day with a large number of mobile apps and connected objects which are supposedly meant to make our lives easier.

Algorithms that eat our personal data

The resulting algorithms are polymorphous. They have grown, observing us from afar, spying on our activities online, and the places we frequent most. They then rose above our interactions in order to better determine who had authority, ignoring the logic of popular voting and classifications based on merit.

Then, in a third moment, they entered our digital intimacy, analysing the quality and frequency of our exchanges in order to assess our reputation and trace our affinities.

Finally, they hide from view in order to better predict the tiniest of our desires, in order to be able to shape them.

These different generations of algorithms still live toge-

	To one side	**Above**	**Within**	**Below**
Example	Audience measurement, Google Analytics, advertising tabs	Google PageRank, Digg, Wikipedia	Number of friends on Facebook, Retweets on Twitter, notes and opinions	Recommendations on Amazon, behaviour based advertising
Data	Visits	Relationships	Likes	Tracking
Population	Representative samples	Votes census, communities	Social networks, affinities, declarative	Implicit individual behaviours
Type of calculation	Vote	Classification by merit	Benchmark	Machine Learning
Principle	Popularity	Autorithy	Reputation	Prediction

According to Domenique Cardon in "À quoi rêvent les algorithmes" [4]

ther, side by side, and are easily recognisable in that they very efficiently provide us with many services. They try to make us pay our "digital dividend"[5] because they discretize our existence, cutting it into the finest possible slices, in order to extract all monetizable information[6].

Every State breeds a terrifying ogre that works in surveillance. The interests of this ogre frequently mix with those of its friends the commercial ogres, as it shamelessly raids their stores, with their approval[7]. Its insatiable appetite leads it to stalk those places with the most data traffic. It is assumed that it should be able to find a terrorist in a haystack, although it often suffers from myopia and obesity, proving more efficient at stealing political and industrial secrets than at trapping the bad guys before they take action.

Algorithms that eat public data

The different administrative strata of the forces of order also cultivate flowering gardens of many-flavoured data: biometric, fiscal, environmental, urban, professional, or even linked to health.

Apparently neutral and objective, the public algorithmic creatures would be the solution to inequalities in treatment in the face of the arbitrations of some civil servants. Nevertheless, they can turn entire families into Kafkaesque insects hanging from the typewriter in the film Brazil[8]. In fact, it is they who determine which school our child should go to, whether you can benefit from social subsidies, what jobs you can apply for, and if your menstrual cycle is ripe to procreate.

The traders in personal data kindly offer to help public

bodies to digitalise and clone the most beautiful plants in the public garden, be they cultural flowers or medicinal herbs. Like the traders, the forces of order pass from observations to predictions, and not only to optimise garbage collection, but also send police forces to where there is the highest possibility that a crime will be committed, thanks to their algo-dogs, PredPol CompStat or HunchLab[9].

Algorithms that eat money

Thomas Peterffy is a financier who dedicated himself to replacing the brokers and their manual operations with automated machines. In 1987, on seeing that the number of orders placed by Peterffy was surprisingly high, those in charge of the markets sent an inspector, who, where he expected to find a room filled with white men shouting and sweating, found nothing more than an IBM computer connected to a singe official Nasdaq terminal[10]. So it was that in 1987, algorithms were launched onto the financial markets.

These days, algo-trading is everywhere, and the serene, algorithmic blinking of the information networks has replaced the hysterical traders. However, even these digital financial creatures have allowed themselves to been overtaken by high-frequency algo-traders, which move at the speed of light. They build routes to arrive at the sale faster than the others[11], making profits with every operation. They currently find refuge in the many “dark pools” that the banks have been able to create thanks to the paradoxical relaxing of regulations. In the lucrative comfort sometimes seen in the “Flash Crashes”[12], the diversity of algorithmic

species increases (Blast, Stealth, Sniffer, Iceberg, Shark, Sumo,...[13]) on a par with the complexity of their strategies, making the "markets" more and more illegible and uncontrollable, even though the assumption is that they are regulated by the stroke of invisible hands.

Evidently, this all impacts on what we call "the real economy", that is to say, people's lives. For example, when Syrian pirates compromise the White House's Twitter Account and post an alarmist tweet that is immediately read by the algo-trader robots, causing the stock market to fall 136 billion dollars in just 3 minutes[14].

A new algorithmic creature has emerged in the finance jungle, in the form of a worm that duplicates in all the receiving computers and gets fatter as it is used, devouring, as it passes, an impressive amount of electricity[15]. It is called a "blockchain"[16] and it has made itself known through "Bitcoin", the first dematerialised crypto-currency to pass through a central banking body attached to a State. Today bitcoin is worth 28 billion dollars[17].

Luckily, initiatives like Ethereum[18] have allowed the worms to mutate so that not only do they register transactions, but they also drive databases and "intelligent" applications ("smart contracts"). This encourages projects such as DAO[19] (Decentralized Autonomous Organisation), a decentralised investment fund with no directors, where everyone participates in decision making as a function of the capital they hold. This fund quickly found itself surrounded by different investors, to the tune of 150 billion dollars.

Nevertheless, a malicious joker managed to get away with a third of it, by exploiting a fault (they call it a feature) in the code, irreparably marked on the body of a DAO hos-

ted by Ethereum. Will it be necessary to cut out the rings of the sick worm? Or kill it to create a new one? The latter is the solution that was adopted to enable investors recover their money, following many "political" discussions, despite the fact that they work from the libertarian principal that "the code makes the law". This raises important legal questions, particularly for defining responsibility in a distributed network[20] or imagining forms of governance for this "code" that, in some domains, is replacing the law in the U.S.

There are other algorithmic creatures that are fans of money and which seek to replace the work of human beings, maximising productivity and costs and thus contributing to a greater concentration of capital. The major companies understand this well, so Foxcom announces the replacement of almost all their employees with a million robots[21] or the law firm BakerHostetler contracts ROSS, an artificial intelligence, to faster study complex legal files[22]. The "death of work" has been declared[23], however it seems that the economic and social regime will barely be able to sustain it in the (near) future.

Algorithms that eat human brains

The final family to be identified in our bestiary of algorithms are those whose will is to fill the human brain, and those who, on the contrary, ultimately aspire to replace it. Artificial Intelligences must be fed with data in order to be able to replace humans in a wide range of processes. This is something Google does with its reCAPTCHA[24] project, those illegible images that we are asked to decipher and transcribe to show the server that we are not robots, but

rather humans, passing the Turing test in reverse[25]. The great innovation with reCAPTCHA is that the fruit of your responses goes directly to feed artificial intelligence and the evolution of Google programmes: deciphering text to improve the digitalization of books, identifying house numbers to refine mapping, and now identifying images containing animals or road signs, to make car autopilots less myopic. The accumulated results are becoming more and more relevant, and they represent millions of hours of human labour[26].

In terms of the algorithm that contributes to feeding our brains, this is, like it's friend the personal data collector, becoming ever more elaborate and subtle. We feed its brain daily with the aid of a search engine that shows us where to find the right place, the most precise information, the most emblematic video. At the beginning of 2017, in 92.8% of cases that search engine was Google. This makes it a cultural dictator in a totally new hegemonic position (and what are the competition doing?!). Not appearing within the first results pages is like not existing. Yet the Google search algorithm is a jealously guarded industrial secret and can only be countered by the right to be forgotten[27].

From the surrealist experience of the researchers in the laboratory that is Facebook[28], who conducted experiments in 2010 on 61 million users, during the U.S. congressional elections, it is known that controlling political messages has a direct influence on the people who are made unwitting guinea pigs, as well as that of their friends, and friends of friends.

From false news reports that have crushed the truth on the social networks, ultimately swell the ranks of post-truth.

What political line do the algorithms that govern content on our “walls” take? Incorporating solutions to problems of incitement to hatred and harassment on these platforms too quickly will place the algorithms and their controllers in the official position of controlling the morals of a large part of society.

One might think that to faster reach the point of technological singularity[29], our digital creatures are crouching in the shadows and plot to make us servile.

Algorithmic governance[30] would be a new mode of governing behaviour, fruit of shifts in our relationship with the other, with the group, with the world, with the very sense of the things that have, thanks to or despite the digital turn, fundamental repercussions on the way norms are created, and with them, obedience[31].

When an algorithm eats from the human brain, this can also lead to the clinical death of the human in question. This can be said of the algorithms that predefine the victims of killer drones, even if they are piloted by men and women. How do the algorithms of a driverless car chose the lesser evil/or number of deaths, when they are involved in an accident that cannot be avoided? Cyber war flies low over our occupied networks, each country sharpening its algorithms to be more and more insidiously lethal than the enemy.

How do we know if an algorithm is bad or good?

Is a bad algorithm one which turns video surveillance cameras into an army of blood-thirsty botnets that come down in droves to strangle the servers? Is a good algorithm one which reminds me of my friends' birthdays? Setting the criteria is not so simple, because we have to consider inter-

dependence between algorithms, the data they use and the intentions behind them. Nevertheless, it can be hoped that a good algorithm will comply with the following:

- It should be “auditable” and therefore consist of open and documented source code;
- It should be “open” and therefore only feed on sets of “open data”, that are complete and “harvestable” by others, which means access should be discriminated and should be paid for certain commercial uses;
- It should be “loyal and fair” without the capacity to create discrimination or injustice (social[32], gender-based[33], etc.) nor to damage human beings[34];
- It should be “transparent”[35] and capable of conducting systematic audits of its own operations and evolution (if it has learning or predictive capabilities) and be capable of subjecting itself to citizen's control;
- It should be “modifiable” and ready to respond to complaints that could require changes to the function of the algorithm.

In this search for algorithmic morality it is also necessary to mention the “ports”, the APIs (standing for Application Public Interfaces), which permit these digital creatures to hunt data from other servers and services, or to place containers, or lay bait... these APIs can be considered a patent-pending for industry, a new form of patenting anti-open-source software. These ports can be opened or closed at the strategic discretion of the owner, or tolls can be implemented when an algorithm's traffic becomes abundant, if such monetarization becomes opportune.

In the public sphere and civil society, we can imagine that the above mentioned criteria of openness, transparen-

cy, accountability and modifiability might be respected some day. This is harder to imagine in the lucrative, private sphere, where data and the algorithms that consume it are being considered "the oil of the future"[36].

Thus a group of American researchers and some "giants" of the digital world have tried to formulate the "principles for responsible algorithms" [37] and they have met to start an encounter about the ethics of artificial intelligence[38]. This is a good way to say to politicians and concerned citizens that that the private sector can "anticipate and administrate" this complexity with positive results, so there really is no need to legislate.

Nevertheless, the issue is not to demand transparency for the code of the algorithms, but rather for their aims. As these are not limited to commercial communication, it is necessary to deploy the law as a means of coercion[39]. We can seek comfort in the participatory debate taking place in France about the "Law of the digital republic" which has led to the obligation of transparency regarding all algorithms used by the forces of order[40], or even INRIA's "TransAlgo" initiative[41] which aspires to assess the accountability and transparency of information robots.

Sovereign algorithmic futurutopias

So, how do we pass from an algorithmic beast we must suffer to a pet that we feed? Let us compost some earthworms to draw the biotechnological ramifications that drive men and technology to live in silicon harmony. How can we take our destinies back into our own hands, retake our mental autonomy, our technological sovereignty which to-

day is driven by algorithms in a space of social control.

Code is a political objective, as in this "numerical" world filled with algo-bots that invade our realities. As political objects, we can therefore attack with the classic weapons: militancy, lobbying and awareness raising with the political power, attempts to influence and deepen regulatory processes, and valuing initiatives that contribute to autonomy and happiness for human kind. It is equally important to demand a more important rôle for civil society in the regulation and norms of the Internet, and the adoption of standards for network technology[42], taking the equivalent of an article of a country's constitution as an example.

At an individual level, it is necessary, without a doubt, to "de-googlise" the Internet[43]. That means, as the Framasoft association proposes, to support hosting of autonomous, transparent, open, neutral services based on solidarity (see, for example, the KITTENS initiative[44]), or self-hosting[45] in an unambitious mini-server. It is also possible to camouflage oneself using end-to-end encryption, although this is not always adaptable nor possible to adopt (PGP and emails); and depending on the situation there may be resources to create interference, trying to hide the "true" data within fictitious but credible data, which a friendly algorithm can provide in abundance.

From the point of view of public power, there is work to be done, the road to ethical transparency is open, they just need to be firmly pushed down it. Of course, these days you need a strange haircut and makeup[46] to escape the facial recognition systems[47]. Biometric files and the linking of public databases and the digital derivatives of the state of emergency, which is now permanent, invite us to not put all our

bytes in one basket.

It is also possible to take part in feeding garbage to these "algo-AI", just like the Twitter users who managed to turn Microsoft's AI TAY sexist, racist and pro-Hitler in less than a day[48].

We could imagine instead raising little "algo-ponies" that would exclaim, with a wave of their multi-coloured manes, against a background of green fields of data, that "friendship is magic!".

Cheesiness aside, it is perhaps necessary to propose a digital intermediary, a "proxy" between us, our data and the public and private actors that host them. This intermediary could comfortably host Eliza [^49], my strictly personal AI that feeds on my activities and preferences to help me better share data and content, anonymously, giving them to public bodies as a matter of general interest, encrypting them or hiding them to escape with my friends who did not manage to get out of the commercial social networks. Distributed in everyone's pocket, personal AIs could become symbiotic, in agreement with their tutors, to tell micro fictions to humanity in the political and cultural context, with a view to building harmonious realities where algorithms, humans, nature and the inorganic world can cohabit peacefully.

1 This title refers to the book by Cathy O'Neil: Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy. Crown, 2016.

2 In this Isaac Asimov futuristic novel, the United States has converted to an "electronic democracy" where the computer Multivac selects a single person to answer a number of questions. Multivac will then use the answers and other data to determine what the results of an election would be, avoiding the need

for an actual election to be held.
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4 Dominique Cardon: A quoi rêvent les algorithmes. Nos vies à l'heure: Nos vies à l'heure des big data. Le Seuil, 2015.

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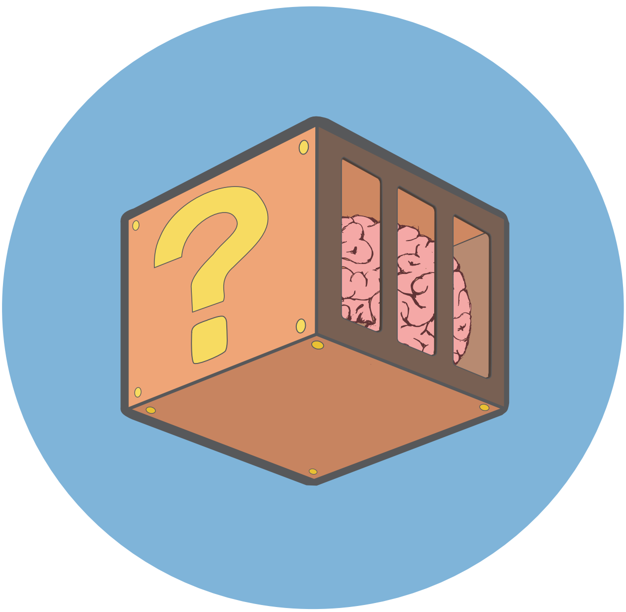
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Digital Governance

Ippolita



Once upon a time...

There was a city on the shores of a mountain lake. The city was very dirty because people threw the waste in the streets; the water ended up in the lake, which became polluted and smelly. More stringent laws were enacted, but nothing happened despite reprimands and fines; even jail proved ineffective. The people had become accustomed to malpractice, they had become addicted to the stench of open sewers and toxic fumes of burning garbage heaps. Every remedy miserably failed. Those who could not bear the situation any more had packed up and run – others were simply resigned. After all, they thought, that even if they would act as they should, as the others would continue to misbehave, it was not worth doing anything.

Then, one day, a manager arrived in town. He proposed to help solve the situation, but only if the city government entrusted him full powers in the matter. If something went wrong, if citizenship complained, they would give him the heave-ho. So he obtained a total delegation. The manager turned entrepreneur and his technical people put many trash baskets in place and announced a fantastic waste collection game. Anyone could participate: just follow the rules for separate waste collection and you could win amazing prizes.

It worked so well that after a few months the city was clean. But now public transport was in crisis. Wild parking. Unsafe roads. And there was no public money available. The manager turned entrepreneur and obtained carte blanche to handle the other sectors in difficulty. He had the citizens registered with full name and address on his social

platform. On it they accounted word for word what they were doing, and what their friends and acquaintances did, and people around them. These and many other actions allowed to enter special ranks; players who distinguished themselves could level up, and gain access to new exciting rewards thanks to their statuses. A sophisticated system made that you could accumulate credits in the form of digital currency on accounts managed by the entrepreneur's various companies. The list of wrongful actions was continuously updated. Reporting an illegal action by a neighbour, for example, entitled the informer to three minutes of free shopping at one of the entrepreneur's supermarkets; five minutes if it was an information about a first-time offender. Digital currency credits replaced traditional money within the city. Every interaction could be quantified based on credit, that you could buy and sell: the entrepreneur's bank took only a small percentage of each exchange.

The city government was dissolved. In its place came a technical governance by the manager, run as a private organization, which resulted in a great saving in terms of time, money and energy. The city quickly became a model for the whole world. Professionals came from far away to study the miracle. Everyone agreed on the most notable feature of the set-up – the true realization of heaven on earth – that there was no need to think or to choose, since a magnificent system of notifications was continuously informing all the players about the next moves to be made in order to gain a reputation. The few dissident voices claimed that the players were acting like automatically pre-programmed machines, but as an initially sceptical citizen confessed, he finally really felt free for the first time in his life. No one wanted to go back to a time when they were in

the grip of uncertainty and doubt about what they should choose.

And so everyone was trained and lived happy thereafter.

Gamification

This story is meant to illustrate the main elements of “gamification”, one of the implementation formats of digital governance systems. Its basic mechanism is very simple: everything that can be described as a problem is converted into a game, or, rather, in a game pattern. Repeating an action deemed correct is encouraged by way of rewards, credits, access to a higher (hierarchical) level, publication in charts or records. Seen from a regulatory point of view, this means that instead of sanctioning infractions, compliance with the rules is rewarded. The outcome is a system of norms which is self-conforming and positive, with no ethical dimension, since the valuation of any behaviour, its axiology, is determined by the system, and not by a personal and/or collective reflection on the action itself. Gamification stands for the society of performance[1].

Loyalty incentives, such as fidelity programs for consumers, for voters, for subjects, have been known for centuries. However, the pervasiveness of interactive digital connection systems opens new scenarios for mass training techniques. With it, cognitive delegation morphs into the delegation of social organization. Automated interaction procedures are refined by capitalizing on the way users handle their personal digital tools. Invidiously, participation in the construction of shared worlds turns into behavioural drill.

Our intention is obviously not to argue for a return to repressive systems. Prohibition and ensuing repression typically triggers a deepening of the desire for transgression and therefore amounts to a negative reinforcement mechanism. Prohibition never works. Yet, conversely, not all that glitters is gold with a positive reinforcement system. Anyone who has dealt with children knows that rewards are more effective than "teaching them a lesson". But then one often comes to realize that once the kid gets "hooked" to the award they will want an ever bigger prize, and that there's no way anything is going to happen unless an even greater accolade can be anticipated. So often a positive reinforcement system reverts into a punitive system, which reveals itself as being merely the opposite of an equivalent system based on rewards.

But education in itself has preciously little to do with compliance with a given rules, and is has also nothing to do with obedience. The same old Socrates, in wanting to educate young people for citizenship by example, did not only break the rules, but he invited others to be disobedient and follow their own "Daimon" (daemon, the "inner voice"). Algorithmic "education" is nothing else than drill training, and leads to servitude. Although in appearance it can produce good results in terms of measurable performance, it certainly does not induce independence, autonomy or responsibility.

Pleasure

The line between learning and training is razor thin. The main factor comes down to the organic chemical which

plays a central role in learning and responding to positive reinforcement stimuli: dopamine (or more technically "3,4-dihydroxyphenethylamine"), a neurotransmitter that runs through the neural paths of our brain. To simplify what is an extremely complex mechanism, we can say that the sense of gratification and reward we experience when we manage to learn something is connected to a release of dopamine. In general, the performance of enjoyable activities in the psycho-physiological realm (drinking, eating, having sex, getting appreciation, empathy, etc.) corresponds to an increased concentration of this neurotransmitter. The same applies, by the way, to the use of drugs.

Learning in all its forms, even in physiological activities, requires effort, care and attention. Reading is tiresome, just as is assimilating any new skill. To attain a satisfactory level with psycho-physiological activities requires effort. The simplest and less costly way to raise the levels of dopamine and hence to experience pleasure is to complete a task, or to perform a given procedure, again and again. Repetition, iteration of a given behaviour is the formula. It works as a short-cut.

The emotional development processes take place in the limbic system, the central and oldest part of the brain. It indicates the presence or the prospect of rewards or punishments to promote the activation of motor programmes aimed at giving pleasure or avoid pain. Addictive drugs operate exactly the same way and in the same brain region, causing feelings of pleasure. Once established neuronal connections get increasingly strengthened, thereby losing in plasticity. This kind of connective stiffening corresponds to a decreased ability to relax the state of pleasant neuronal

excitation caused by dopamine: in more technical terms, it occurs by way of a long-term impairment of the synaptic pathways that connect neurons. Such trails become like paved roads in our brains, and it takes truckloads of dopamine to feel pleasure. At each step, the necessary dose has to be increased. This explains why drill is so effective, and why it generates addiction. The desire for pleasure related to an automatism, which amounts to compulsive behaviour, makes us enter into a repetitive loop getting out of which becomes increasingly difficult because the neural pathways that are always excited, will not be able to do anything else but get more and more powerful with the passage of time: beat-rhythm-repetition.

The user touches the device. Not once, but many times. From all the touches - every touch is a beat - comes the rhythm, which is repeated in many interactions with the device. Habitual behaviour is manifested in a cycle.

Give us our game back!

We need to approach the concept of cognitive ergonomics (from ancient Greek “ergon – nomos”, “rules of the labor”): thanks to the digital media, we can lower our cognitive load and, for example, and delegate to some device the task of remembering all the dates and numbers of our agenda. A very useful support, kind of indispensable - almost. We did not need any tuition to be able to use the phone directory in print. Or even our telephone for that matter, or how to manage our contacts on a social platform. Maybe we had at times to ask some geek type among our friends. We probably don't have a clue how all this stuff works, but the main thing is that we are able to do with it

what we want. And to do this, we will have to perform a series of repetitive actions, or retrace a procedure. We go by what is in the interface and follow the obvious traces of the algorithmic procedure laid down by others for us.

The organization of our cognitive system is mainly based on intuitive faculties and reasoning. Entrusting ourselves to intuition, we only interpret a context through mental schemes that are already part of our non-conscious mnemonic luggage. Cognitive and computational effort is minimal, since we do not think about what we're doing. We act automatically. Reasoning instead requires substantial cognitive effort, we must dwell on a problem, make hypotheses, follow a sequence which requires a slow pace and full involvement. Intuition allows us to act and to use a tool without being able to explain its operation, while the reasoning can make us able to explain exactly how something works without necessary being able to use it. A virtuosa violin player may have no idea how her muscles work, but she can use them to perfection. Conversely, we may be able to describe the steps to drive a tractor theoretically by reading a manual, without being able to actually drive it.

Declarative memory (knowing what, knowing something) is distinct from procedural memory (knowing how, knowing a procedure). All the activities we carry out automatically involve procedural memory. When we act intuitively we refer to the procedures we learned in the past, acting out the strategy which seems the most appropriate for the successful completion of the task at hand. We do not need to think. It is a question of ecology of resources, like not wasting valuable computational energy to think about how to ride a bike if you already know how to ride it. But when there is no match with our previous experiences, we

must refer to reason and analyze environmental conditions before acting: if a tire is flat, we try to take it apart and fix it. But if we can't manage, we have to ask for help, or tinker with it otherwise, and create a fresh, not yet applied procedure.

In general, using a digital medium, e.g. a web interface, on an ongoing, daily basis, means to gradually learn to use it automatically. And as these interfaces are designed to give the most user-friendly, intuitive "experience", it is easy to see how, through the creation of mental patterns, one can say that we use them "without thinking". Even if we switch to a different make of cellphone while using the same applications, suffices to identify its icons to go back to the automatic mode, and type in without looking at the keypad.

Once trained, the mind is able to repeat one the particular, earlier internal simulations of the action that we want to complete: intuitive ability is therefore the ability to simulate a known procedure and acting it out automatically. This automatism coincides with the execution of the procedure. From there springs most of the apparent misunderstandings regarding the educational benefits of the use of digital devices, and about cognitive differences allegedly existing between "digital natives" and later adopters. A good illustration is provided by the fact that smartphones and tablets are used in the rehabilitation of patients suffering from neuro-degenerative afflictions such as semantic dementia. In their case, since procedural memory is the only kind of memory left to them, patients are able to master several functions and use the devices on a daily basis without problems even though they are otherwise unable to remember very simple notions.

“Digital natives” is in itself not a very valid concept, people born in the television age also can become proficient computer users, interact socially and engage in interpersonal relationships mediated by digital devices, and find experiencing and participating in multimedia interconnected realities more interesting than the “disconnected” everyday life. All moderately intelligent human beings can become “digital natives”. A human brain is very plastic and it modifies itself very quickly when learning procedures, and this is especially the case with gamification related procedures. But then, this does not mean that people are consequently able to comprehend, interpret, analyze, rewrite or teach the procedural mechanisms they themselves repeat routinely!

The more or less deep dive into a virtual reality penetrating our organic body through the optic nerves generates a detachment to our environment and a selective inattention to non-visual stimuli, as well as being addictive. And breaking away from the screen, after passing hours that have seemed to be minutes, can be felt as a real ache. Give us the game back, even for a moment, just a moment, it was so fun! It is such a cool separation from the body. Here, it is the passage of time which constitutes the fundamental parameter to identify the different types of interaction. When we are not aware the passing of time, we are probably in a phase of flow[2], of procedural immersion. We are living in a current, immediate cycle of interaction, an extremely addictive experience, which we would like never to end. When on the contrary time is perceived as linear, with experiential stages we are aware of, and which we are able to stratify, to store and to recall later, we find ourselves in a time of sequential learning and of applying declarative memory.

By now, video games have become a fundamental part of the life of millions of people, who together spend billions of hours playing on or off-line. In terms of turn-over, the video game industry has overtaken all other branches of the entertainment industry: developing a successful video game, for instance a MMOG (Massively Multiplayer Online Game), in which participants connect simultaneously to play in a world that they create together, can be more expensive, and then turn out to be more profitable, than to produce a Hollywood blockbuster. Of course video games are not all the same but the vast majority are designed to induce flow. Besides bolstering the dopamine circuit, they can act on the release of oxytocin, which modulate fear and anxiety and induces prosocial behaviour, and has an effect on many other neurotransmitters and hormones.

Many video games are made following the prescriptions of behaviourism, and in particular the format of the Skinner box game, designed by the American psychologist Burrhus Frederic Skinner[3] in his experiments with rats and pigeons in the 1930s. Skinner developed a method of learning called operant conditioning. A particular type of behaviour will be prompted more successfully, even in the case of humans, by way of rewards granted in a non-automatic way. Thus, a rat will receives food if it presses a button, but not always. Training is more effective in that buttons will be pressed down more frequently if the positive reinforcement is not automatic, but possible or probable. A common example with humans is provided by gamblers at slot machines almost everywhere: players know that they will not always win, if ever, yet they continue to chip in, because the operant conditioning ("I can win") is more powerful than im-

mediate frustration ("I did not win this time"). Behavioural training is perhaps the greatest deceit in gamification, and it is standard to video games and in fact, any other type of game.

The interaction with digital media needs not necessarily to be limited to a mere self-training, an exercise in procedural memory and simultaneous intelligence or intuition. Hacking, the art to "put your hands on", to take over the operation of a complex operating system (hard- or software), to tweak it and alter its functioning at will certainly also appeals to the senses. Yet remaining dazed and (not) confused in front of a screen for a classic and self destructive "flying to Australia" session of 24 hours or more, until the body/mind collapses of exhaustion is a typical example of system-induced self-destructive behaviour abusing the self-reinforcing dopamine cycle making people forget their own organic body.

Thus we strongly aim to and advocate to a conscious and balanced back and forth between various forms of intelligence and memory. Care of the self starts with a careful observation of personal interactions, with listening to personal inclinations, this with the aim to be able to find the pace to suit us, and to be able to set our own rules. In other words, to create our own interactive "liturgy".

From self-defense to hacker convivial pedagogy

We do not want to give up on the game, to give up the pleasure of playing together. Indeed, we think that learning by playing is one of the finest ways to genuinely layer our experiences, to make them part of us. "Hands on" be our

motto: for the pleasure of tinkering with machines, tweaking devices and systems, and doing it together, this is is the real joy. This activity in the first person, this pleasant interaction (some erotic thrill must be part of the game!) is a precondition of happiness for a hacker playing with technological tools.

In the course of our "s-gamificazione" workshops (degamification) we have developed a simple methodology to move towards a convivial pedagogy, playing with the machines we like. But then, we first have to get rid of the automatisms that reduce us to mere cogs of the corporate megamachines. To us, digital self-defense means above all to drop the habit of re-acting to gamification stimuli. As a start we have to change our habits in a conscious way.

It is not possible here to give an account of a typical workshop, because there is no such thing as a typical workshop. In our experience every group of people and every situation turns out to be radically different from any other. Also, very personal issues frequently come to the fore, and it is essential to keep these within the protected area of the group, away from the limelight. Thus we have tried to abstract the basic steps and elements of our workshops in order to give an account that runs as one and the same story, yet retold in many different ways.

The first step is to acknowledge the fact that we are immersed in interactive environments shaped by automatic devices we did not choose and which do not necessarily make us feel good.

The second step is to observe ourselves acting as if we were strangers, with weird habits – to look at ourselves in the shape of strange animals waiting anxiously for that

message, getting irritated if it doesn't appear, getting elated by a like, bouncing when a notification pops up ...

Once we have identified the automatism (stimulus-response) that make us behave in a certain way, we focus the attention on the emotional changes that result from them. Anger, joy, sadness, excitement, impatience, envy, fear and many other emotions manifest themselves constantly, often in combination. There obviously exists an interactive design of emotion of which we are unaware.

The third step is to tell others, to people we trust, what we have discovered about ourselves, about our behaviours. This way we are not disclosing facts about ourselves on public notice boards owned by multinational corporation. On the contrary, we choose our own dedicated spaces and times to bring out the masks that enliven our personal interactive liturgy. The bundles of emotions which makes us take the character of an undecided person, or of a braggart, or of a shy individual, of a competent expert, and of many other possible types represents what has settled down in our individuality - without us noticing. Up to that point the positions “we answer like that” and “we act like this” - show us how much we have become enslaved to our own induced behaviors.

Finally, the fourth step is to compare our stories with those of others. Very often we find that our compulsive habits are very much similar to those of our peers, but we also discover that there exists a great many ways to make a change – as long as we do really want it.

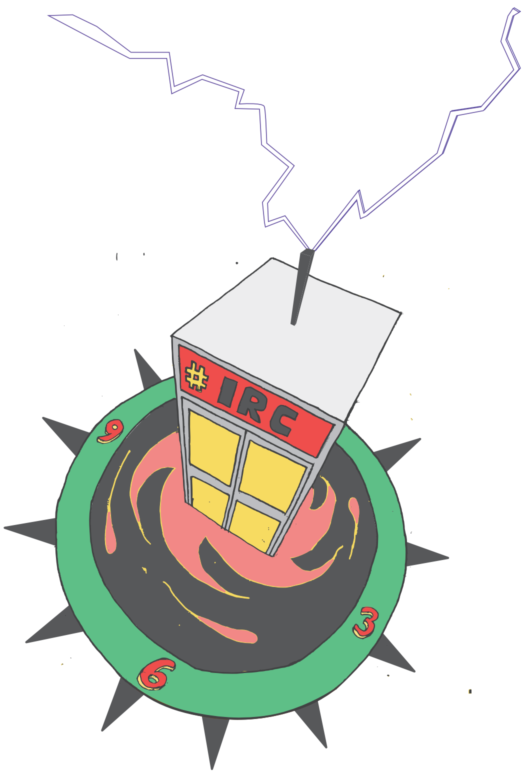
1 "The Performance Society", in Ippolita, In the Facebook Aquarium, INC, Amsterdam, 2015, p. 23.

2 Flow, or in the zone / in the groove. See Mihály Csíkszentmihály, Flow: the Psychology of optimal experience, Harper & Row, New York 1990.

3 A brief introduction can be found in McLeod, S. A. (2015). Skinner - Operant Conditioning. www.simplypsychology.org/operant-conditioning.html The classic work is Skinner, B. F. (1953). Science and human behavior. http://www.bfskinner.org/newtestsite/wp-content/uploads/2014/02/ScienceHumanBehavior.pdf

Keeping technological sovereignty: The case of Internet Relay Chat

Maxigas



New technologies sometimes manifest a critique of the existing conditions, but their empowering affordances are often lost as their features are progressively integrated to the requirements of capitalism during their subsequent development. The history of chat devices is a textbook example of critique and recuperation in technological cycles. However, the social history and contemporary use of IRC (Internet Relay Chat) proves that such historical logic can be – and is – resisted in some exceptional cases. This case study does not necessarily recommend IRC as a medium of communication for activists, but rather seeks to put forward some theses on the history of technology that could be found useful in certain situations.[1]

The systematic study of historical cases may contribute to the refinement of a taste for critical technology adoption practices in communities who wish to keep control over the technologies that mediate their social relations. An appreciation of critique and recuperation in technological cycles may help to further technological sovereignty (Haché 2014) over longer time frames, where local efforts could potentially become part of capitalist regimes of oppression and exploitation over time. A corollary observation is that technical features may result in crucially different technological affordances depending on their context of use: this shows that pure techniques should never be promoted or rejected in themselves.

Internet Relay Chat

Internet Relay Chat is a very basic but very flexible protocol for real time written conversations. It has been first

implemented in 1988, one year before the World Wide Web. IRC reached the height of its popularity as a general purpose social media during the first Gulf War and the siege of Sarajevo (1992-1996). At this time it performed various functions that were later fulfilled by specialised programs and platforms, such as dating, following friends or file sharing. As the population of the Internet grew and market consolidation set it on the turn of the millennium, IRC faded from the public view.

However, it is known from seminal studies of contemporary peer production communities that FLOSS[2] developers (Coleman 2012), hackerspace members (Maxigas 2015), Wikipedia editors (Broughton 2008) and Anonymous hacktivists (Dagdelen 2012) use primarily IRC for everyday backstage communication. While the first group has always been on IRC, the latter three adopted it after the apparent demise of the medium. "Why these contemporary user groups – widely considered as disruptive innovators and early adopters – stick to a museological chat technology despite its obvious limitations within the current technological landscape?" Currently popular social networking platforms, such as Facebook and Twitter, offer similar features and appear to be a more obvious choice. I propose that while IRC use can seem retrograde, it is actually a critical technology adoption practice that empirically evades, and analytically highlights the pitfalls of mainstream social media monopolies.

Recuperation

Critique and recuperation in technological cycles is a process of integrating societal demands into the capitalist

system. New technologies sometimes embody a demand for a better society and a critique of the existing conditions. While such demands are typically addressed by subsequent versions of the same technology, the same technology is also made to conform to the two main requirements of the capitalist system. These latter two are the preservation of social peace (i.e. repression), and the intensification of exploitation (i.e. capital accumulation). It often happens that the implementation of these two requirements neutralises the societal gains from the demand originally associated with the technology.

One aspect or form of recuperation is commodification. Commodification is when something at some point becomes a commodity to be brought and sold on the market. Commodification targets authentic things, which are often already perceived to be valuable – for instance as a moral good – but not yet recognised as an object of monetary exchange. The loss of authenticity through commodification produces anxiety in consumers, which can be diagnosed as the affective trace of capital's violence.

Histories

Recuperation as a historical logic can be seen at work in a wide range of technologies, from the history of chat to the development of personal computing. The personal computer was the material expression – or functional implementation – of countercultural ideals of personal freedom in the 1970s (Markoff 2005; Turner 2006; Zandbergen 2011). The first PCs were constructed by hobbyists, most famously around the Homebrew Computer Club, but just as well by their counterparts in less hyped places such as Yugoslavia by

people like Voja Antonić (Antonić 2014). Their ideal of general computing for everybody was realised to a considerable extent in rich countries, where PCs became available on the civilian market as household goods in the 1980s. Companies whose CEOs sometimes grew up in the Homebrew scene, such as Apple Inc. and the Microsoft Corporation lead this transformation, with considerable support from governments who were convinced by the revolutionary myth of computing legitimised by counterculturalist visions. PCs were interconnected through open standards to form the Internet. While in the 1990s few users built their own hardware any more, FLOSS allowed full control over their software.

The history of the next cycle of personal communication devices – the mobile phones – is in contrast a purely corporate history, culminating in the smartphone. The smartphone, in turn, is far removed from the ideal of user-controlled general computing. Mobile networks are based on protocols whose details are trade secrets; SIM cards which run an operating system remotely controlled by the vendor, and even the popular Android FLOSS ecosystem is tightly coupled to Google Inc. services. While mobiles reach 100% of the global population and thus realised the demand of personal computing for everyone (IANS 2013), the ideals of general computing and user control that provided the rationale for personal computing have been inversed (Doctorow 2011).

Chat devices answered a basic human need to discuss arbitrary topics informally in a real time environment, in a coffee-house public manner where strangers can band together but there is also possibility for one-to-one private conversations. After a long and parallel history of chat de-

vices, in the 1990s they consolidated into IRC. The next generation of chat devices were Instant Messengers (Maxigas 2014). On the backend (Stalder 2013), IMs used proprietary protocols and centralised infrastructures, instead of the community defined protocols of IRC and its federated model. On the frontend (Stalder 2013), IMs were organised around private conversations, in stark contrast with IRC's concept of topical channels (itself taken from Citizens' Band – CB – radio). Later, as the World Wide Web took off, chat features were integrated into Web 2.0 social media platforms.

Eventually, surveillance came to be the key means for both maintaining social peace and deepening exploitation on social media platforms[3]. Everyday, informal, even intimate gestures are captured and stored, sorted and mined for the purposes of both targeted advertising and targeted repression. Such revenue is indispensable to the capital accumulation mechanisms of a growing section of capital, while the intelligence gained by authorities who share access to the information flows is essential to the maintenance of social order in both dictatorships and democracies. For instance, surveillance – technically based on the analysis of log files – accounted for 89% of Google's profit in 2014 (Griffith 2015)[4].All this hinges on successful platformisation: the ability of a vendor to install themselves as an obligatory passage point for generally mundane and often minuscule social interactions (Gillespie 2010). The kind of digital milieus where average Internet users chit-chat nowadays have been variously described by scholars as enclosures, walled gardens and social media monopolies (Lovink and Rasch 2013).

The anxiety experienced by users stems from the fact that a supposedly informal space of social interaction is mediated by capital and overseen by the state, through mechanisms that seem obscure, arbitrary and partial from below. One can remember that the two defining characteristics of a healthy civil society that can support technological sovereignty are its independence from capital and separation from the state (Haché 2014). It is privacy in a structural and collective sense that can be reclaimed through technological sovereignty initiatives, but only through the continuous struggle of users for taking the technological mediation of their social life into their own hands.

Notably, neither chat (Latzko-Toth 2010) nor personal computing (Levy 1984) were "inventions" in the sense that a good idea was implemented and socialised through commodity circulation. Both found a foothold in the market only after a relatively long period where fringe elements fought for them, often breaking existing laws, regulations and social norms. Society then slowly tamed these technologies – and now they are used to pacify society itself.

Backlogs

Logs are consecutive lines of texts that record events and interactions, from logging in a service to a piece of conversation between hitting the Send button.

As a Human-Computer Interaction limitation

IRC is different from many other chat devices in that users can only follow conversations as long as they are logged in. If a particular user is not online, there is no way to

contact her. Conversely, when a user logs back to a channel, she has no idea what she missed while she was offline. Due to the flexibility of the medium, there are many workarounds for the lack of backlogs, but the fundamental fact remains that solving this problem is out of scope of the IRC protocol. Network operators could solve the problem if they wanted, but in practice users are – literally – left to their own devices.

As a classic affordance

When IRC was conceived (1988), the lack of backlogs was not a particularly unique property of IRC. The feature was absent from several other chat devices. However, by the end of the decade it took on a particular significance. The lack of backlogs allowed IRC to keep up with the radical increase of Internet users and become a mass media of its own. In the 1990s IRC was the most popular dating application before dating websites went online, music sharing software before the rise and fall of Napster[5],

and micro-blogging service before Twitter cashed in on hashtags. Users saw nothing geeky or techie in IRC: it was as quotidian as the ubiquitous GeoCities[6] home pages.

In the beginning of the 1990s it was usual practice for the Internet community to run popular services on a volunteer basis, or for institutions to contribute to the running costs of public infrastructures. However, by the end of the decade the dot-com bubble[7] was in full swing and users flooded the networks, so that operating media comparable to the popularity of IRC was serious business. While purveyors of various other services had to look for a business model in order to ensure the sustainability of their operations, IRC

operators did not need to commodify their services. Why?

Because keeping track of backlogs for each user would mean that resource utilisation scaled exponentially with the number of users, whereas if the server only broadcasts new lines as they arrive and then forgets about them, connecting more users results in little overhead. This is more or less true for both processing power and storage capacity: the two essential computing costs to be taken into account when operating services. Similarly, keeping backlogs would increase the complexity of server software, translating into increased costs in terms of development and administration work hours.

How these factors played out historically was that workers at Internet Service Providers or academic outlets could just let a spare server running in the corner, without having to justify the expenses to funders or answering too many questions from their superiors. Under-the-counter IRC hosting can be thought of as the détournement of fixed capital by users, rather than the recuperation of users' demands by capital. An anecdote illustrates the relationship of IRC to the burgeoning IT industry.

It was already 1996 when Microsoft included an IRC client in the default installation of its popular Windows operating system, taking note of IRC's mainstream appeal. (Kurlander, Skelly, and Salesin 1996) In the first major attempt to recuperate IRC, the software was developed by the company's Artificial Intelligence research unit, and the application connected automatically to the company's own IRC servers. (Latzko-Toth 2010) Ironically, the Comic Chat IRC interface was never popular with users, and the only artifact that went down in history from the whole enterprise was the Comic Sans font, which is still the laughing

stock of Internet users. Microsoft never figured out how to make money from the largest online chat phenomena of the time.

IRC networks have no corporate overlords. Instead, they are made up of federated servers run by otherwise unconnected actors, from individual geeks through academic institutions to IT companies or even criminal organisations. So much so, that upon logging in to a mainstream IRC network today, it is actually hard to find out who is sponsoring the resources behind the server. The model of Internet-wise, community-run, community-policed and community-developed communication resources may seem atavistic today, when even starry-eyed activists think that it is impossible to change the world without becoming entrepreneurs and finding a "sustainable" business model. However, running the infrastructure as a commons works for IRC just as well as in the 1990s. It allows users to understand and control the media they use to share and collaborate: an essential condition for nurturing technological sovereignty.

As a modern affordance

The same feature that allowed IRC to become a mass media in the 1990s actually prevents its from mainstream adoption in the 2010s. Users dropping into a channel, asking a question, then leaving in frustration 20 minutes later are a case in point. These lamers living in the age of mobile connectivity cannot keep their IRC clients logged in for hours on end, like the owners of desktop computers once did, and IRC users who have access to always-on servers do today. Now, only relatively sophisticated users get the full IRC experience, and feel part of the chat channels community. Such elitism excludes less motivated users, but keeps

the conversation within active members of peer production communities.

FLOSS developers, Anonymous hacktivists, Wikipedia editors and hackerspace members adopted IRC as their backstage communication channels. By now it is the only contemporary chat device on the Internet that allows informal, largely public, topic-centric discussions in a non-commercial environment free of state oversight and corporate exploitation. These criteria are paramount to groups that work together to produce for the common good and which deal with sensitive topics. Of course, topical, public, informal discussions were the original demand behind the popularity of chat devices.

However, through three cycles, features and affordances shifted towards personal conversations with people that you already know, while even group chat features came to be tightly coupled to surveillance. Chat devices are available for all today, yet historical changes undermined the original demands and the social critique that saw chat as a place for congregation and collaboration free from the interference of the state and capital. In light of these developments, the lack of backlogs – that makes surveillance technically complicated – came to mean a very different thing: it still protected the technological sovereignty of user groups, but only those that invested time and energy to hold on to it.

Conclusions

It seems that technical deficiencies can have positive social consequences. The same limitation – the lack of backlogs – that allowed IRC to become a mass media in the 1990s, prevents its mass adoption in the 2010s. However, it

also poses problems for data mining and surveillance, which eventually forestalls its recuperation. As a user-controlled technology, it now plays an important part in the media ecology of the Internet, as the everyday backstage communication platform for peer production communities.

These relatively sophisticated user groups benefit from the simplicity, flexibility and open architecture of the medium, which allows them to customise it to their needs. Conversely, most Internet users are used to be served by corporate social media platforms that cater to their needs effortlessly. The contrast between the two approaches to technology adoption begs the question whether it is more desirable to work for the democratisation of knowledge or merely the democratisation of technology.

The lack of backlogs helped to build technological sovereignty for Internet users for a decade and later sheltered peer producers from the capitalist requirements of exploitation and repression. Those who care about IRC had to navigate a terrain of changing social conditions – including rifts in the technological landscape and paradigm shifts in political economy – which recontextualised the significance of technical features and limitations. The contemporary use of IRC is based on properties and patterns of the medium that were commonplace in the 1990s but were superseded by more capitalist media since then. Therefore, it can be conceptualised as a time machine which brings past technological and political conditions to the present, with surprising consequences[8].

1 A gentle introduction is Bango (2013), while activists may find Beritelli (2017) useful for a jump start.

2 Free and Open Source Software.

3 "The legacy of the 20th century has accustomed us to think that social control pertains only to the political, but it has long since become primarily an economic question of commercial implications. It is no coincidence that the NSA has made use of the collaboration with Microsoft, Yahoo, Google, Facebook, Apple and so on, to obtain data for the surveillance program PRISM." (Ippolita 2015, 7)

4 "Google is a profit-oriented, advertising-financed moneymaking machine that turns users and their data into a commodity." (Fuchs 2012, 47)

5 The software and company that brought peer-to-peer file sharing into the limelight and folded after a much publicised copyright controversy (1999-2002).

6 Popular free web hosting service (1994-2009) that allowed users to upload their own websites: "an important outlet for personal expression on the Web for almost 15 years" according to the Internet Archive (2009).

7 A speculative investment bubble (1996-2001) inflated by the growth of the World Wide Web and burst because it was not clear how companies offering online services could turn a profit on traffic.

8 With the support of a postdoctoral grant from the Universitat Oberta de Catalunya (UOC) and the sponsorship of the Central European University Foundation, Budapest (CEUBPF) for a fellowship at the Center for Media, Data and Society in the School of Public Policy.

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Hacklabs to technological cooperatives

Carolina



Techno-political collectives mix technical and political concerns. A perfect example is Riseup which defines its mission as a provider of "*online communication tools for people and groups working on liberatory social change. We are a project to create democratic alternatives and practice self-determination by controlling our own secure means of communications*". Nowadays the field is composed by very different types of organizations ranging from loose and informal networks of hacktivists, free software communities, formal organisations such as foundations, start-ups invested in the so-called civic tech and even public institutions and council towns.

Some years ago, technological sovereignty meant the development of free technologies[0] by and for the civil society. Empowering society by developing tools, hardware, services and infrastructure that meet social needs based on the ethics of free software and self-management. Nowadays, with the transition to open source things have become messy as big corporations promoting *open source* software basically for their own benefit have broken the relation between technological development and social responsibility.

In this text I will rethink what role cooperatives have, or could have, as economic and social actors in reclaiming this relationship. To do so, I will depart from the broad galaxy of techno-political collectives[1], and then focus on the format of technological cooperatives as they have been deployed in Spain.

A galaxy of initiatives

We find foundations which can be committed to create open source and free software solutions and services (FSF,

Mozilla, Blender, etc.) and/or to protect and defend digital rights (Electronic Frontier Foundation, La Quadrature du Net, X-net) mobilizing and pulling economic resources to make those project run in the mid and long term. People can support foundations as a donor, volunteer, intern. They normally look for experienced and qualified professionals and count with formal and legal structures when many techno-political collectives are based on informal groups and communities.

Another weird aspect of the current scene consists in local government initiatives which are working towards openness and transparency based on citizen participation. Many “rebellious” council towns located in Spain are supporting the development of free software tools focused on citizen driven political participation[2], and behind those developments, *freelancers*, small companies and cooperatives are working on setting up viable, robust and trustful systems to promote open democracy.

Technological cooperatives can be found at the intersection of both previous options as they have an economical goal aiming towards sustainability and also a political and social approach to technology. Besides, as most of their clients come from the third sector (non-profit oriented, such as NGOs, associations, collectives) they can help build products based on their specific needs and desires. Examples include[3] Candela (Amnesty's activist management app), GONG (project/budget manager for NGOs), Oigame (online petition platform), Nolotiro (platform to exchange things), Mecambio (repository of energetic, financing and connectivity alternatives).

Creating a coop...

From now on, I will focus on the particular story of how we founded a free software cooperative, Dabne, in Spain – but simultaneously others were doing the same[4]. In the 90's, when Internet started to be accessible, several projects[5] wonder what it meant to escape from established identities, self-organize online transgressing borders, create a collective brain. *Hacklabs,* in squats or association offices, were places to experiment, learn about things that were not easily available as not everyone had an Internet access yet, nor a computer. Until then *hackers* were barely visible and *hacklabs* became that meeting point where "isolated" hackers came in contact with social movements. A passionate hybrid came out of that, it knock a strong free/libre software community which had a high impact on society's approach to free technology.

Spain has quite a long tradition of agricultural and industrial cooperatives and at some point, some of us started thinking that our hobby could turn through cooperativism into a way of living. As each cooperative have their own agreements regarding work and labour, I will share the terms under which we founded our own:

- We wanted to make a living but not at all costs.
- We wanted a shared decision making process.
- We wanted transparency.
- We wanted to define our goals, and change them when needed.
- We wanted everybody to be treated equal and in a fair way.

• We wanted to continue learning, have fun and promote free software.

• We didn't want to be slaves of our work but work with others in a collaborative and cooperative way.

With that in mind, we analysed how the "enterprise world" worked and wonder if we could become "business people" doing something that until then we did for free. A key element lied in the belief that we were going to found companies and step into "the market", that thing governed by capitalist rules which we were deeply against. Vertigo. There were no previous references of free technology cooperatives neither money to invest (we needed 250€ each). There was a strong determination and will to not work for big capitalist companies that make you uniform, dull and slave to their rules. The libre/free software community was there so we were not alone, we had our computers and skills, our beliefs that free technologies empower society, that free software brings sovereignty and that the digital era should make knowledge accessible, open doors to people and bring democratic alternatives to societies. We were choosing a way of living not just a job.

Dabne was founded in 2005 and it took us one year to understand what it meant to create a company, to manage a business and to decide a legal form that would favour our values of collaboration, transparency and responsibility. We went to workshops, talks, trainings, wrote business plans, attend appointments at the Chamber of Commerce. It seemed endless but little by little things began to take shape.

Becoming a coop happens in a specific environment of cooperatives advisers which is by far more friendly and easy

to ask than in the start up world for instance. Mantras like “success”, “fame”, “competitiveness”,“big profit” are not part of their vocabulary. They gave us a social approach, an understanding of how to address our impact and empower social organisations in the technical aspect.

Our friends xsto.info had founded one year before a free software cooperative in Madrid, they were a small group of *sysadmins*, web developers, wireless experts also committed to the free software community. Their experience helped us, we could share our doubts, difficulties, and see how others had gone through similar situations.

All in all, we managed to set up the company, and one good thing about software is that to start up, you basically need nothing but knowledge, a laptop and Internet access which means that costs are minimum – but the first challenge is to get the first clients. Through friends and contacts, we started our way, then the word spread mouth to mouth and slowly we had our group of clients.

Our mainly technical profile made us look for alliances like with noez.org focused on design and innovation centred on people. With them we could share different perspectives of technologies and made our work more understandable. Then Dabne became in an unplanned way a women's free software cooperative. So far we do not know of any other women’s software development cooperative in Spain. This led Dabne to IT counselling: as active listeners we could make technologies comprehensible to non-technical people, adjust projects rhythms, be honest and able to say no when we cannot do it.

Building a multi-verse of communities and networks

Cooperatives are most of the times fragile. But by working together, building and taking part in existing communities, creating and nurturing networks, they can strengthen their resilience and sustainability over time.

Through a cooperatives' platform (UMCTA) we got in contact with environmental, agroecology, social work and social adviser cooperatives willing to share their longer experience and knowledge. To become a coop also meant to enter the social and solidarity economy community[6] At that time Coop57-Madrid, an ethical financial service cooperative was founded and its goal has been to finance social and solidarity economy projects thanks to investments from civil society. Red de economía alternativa y solidaria (REAS) and the social market are networks for the production and distribution of goods and services based on the principles of social and solidarity economy. Among those we found ones concerned with social transformation, environmental sustainability, commons, gender equality, transparency, participation, self-organization, internal democracy.

Interestingly, most social and solidarity economy networks share a lack of interest towards techno-political issues, making difficult to include the concerns of free software cooperatives in their agenda. Because of this, in 2007 technical cooperatives set up the initiative "Software libre y ONGs", dedicated to promoting the use of free software and free technologies. A call for breakfasts while having short talks complemented with a conference focused on Free/Libre software and Third sector organizations. At a

bigger scale, in 2008, the Federal Association of Free software companies (Asolif) and other platforms[7] were created for promoting free software, create new business models and achieve responsible wealth.

On the other hand, communities were built around each specific technology, programming language, content management system, operating system distribution or hardware, in order to advance knowledge, share good practices, come up with improvements, and welcome *newbies*. A small cooperative uses several technologies, so the best option would be to participate in the different technical communities and attend their events (conferences, meet-ups, etc). But being able to take part of IT community events requires people, time and money, which is very difficult to handle in a small cooperative with limited resources...

Yet, time has shown that new people are founding cooperatives and collectives[8] around free technology, so the wheel keeps rolling.

SWOT for coop

I will recap dimensions introduced previously using a Strength Weakness Opportunities Threats (SWOT) analysis where:

Strengths refers to characteristics and internal factors of the cooperative or project that give it an advantage over others:

- Small team can change and adapt quickly
- Flexible working environment (home, office, client's office)

• Ability to make decisions and define company goals
• No initial capital needed
• Define own timing
• Good corporate image
• Creativity
• Curiosity
• Have fun

Weaknesses refers to characteristics of the cooperative or project that puts it at a disadvantage relative to others:

• Strain of working
• 24/7 involvement
• No business management experience
• No specialized profiles
• Difficulty to grow
• Communication
• No financial cushion
• No legal counselling

Opportunities refers to external factors of the environment that the cooperative or project could exploit to its advantage:

• Able to develop own ideas & projects
• Ability to chose partners & projects
• Be part of different networks & communities
• Capacity to respond to concrete and uncommon needs and desires

Threats are external elements in the environment that

could cause trouble for the cooperative or project:

- Exhaustion and burn out
- Uncertainty about future
- No update on technical issues
- Price reduction

Now some open questions remain

Cooperatives can make possible the building of new autonomous zones while responding to many challenges:

• **Economy:** how to shape an economy of the commons, social and supportive?

• **Self-organization:** how to be sustainable in a long term run, while questioning unquestionable truths like, consensus, horizontality, participation, leadership?

• **Technological freedom:** how to fight for free software, digital rights, open knowledge and *copyleft*?

As years pass by, technological cooperatives still looks like a small field based on strong personal relationships, which are key to building trust and assuming new challenges, but that can be also a limitation when there is a need to scale up. Besides, the precarious and uncertain economic situation makes it difficult to integrate new people. However, there is always a moment when the project grows and with it, should the team grow, how … or not?

Then who should be part of the cooperative? Should they have specific technical skills? Should they have a versatile profile? Are technical skills always needed? Is it affordable and ethical to have apprenticeships?

And what about decision making processes? Cooperati-

vism is about sharing the decision making process but experience shows that not everyone wants to take part of it – should they be excluded from the cooperative? Is the ability to make decisions key to be part of a cooperative? Should all decisions be taken in common?

These challenges give a comprehensible vision of the times to come, and the creation of these autonomous zones opens possibilities to different ways of understanding work, the commons, sustainability and economy.

[0] As a reminder, free technologies, in a nutshell, are the technologies and services based on the freedom given by free/libre software and it's philosophy. Freedom 0: The freedom to run the program for any purpose. Freedom 1: The freedom to study how the program works, and change it to make it do what you wish. Freedom 2: The freedom to redistribute and make copies so you can help your neighbour. Freedom 3: The freedom to improve the program, and release your improvements (and modified versions in general) to the public, so that the whole community benefits.

[1]

- http://riseup.net (USA)
- http://autistici.org (ITA)
- http://www.free.de/ (GER)
- http://so36.net (GER)
- https://www.boum.org/ (FR)
- http://nodo50.org (ESP)
- http://pangea.org/ (ESP)
- https://www.immerda.ch/ (CH)
- https://mayfirst.org(USA)

[2]

https://github.com/AyuntamientoMadrid/consul
https://github.com/AjuntamentdeBarcelona/decidim

[3]

- Candela: https://github.com/amnesty/candela
- Gong: https://gong.org.es/projects/gor

- Oigame: https://github.com/alabs/oigame
- Nolotiro: https://github.com/alabs/nolotiro.org
- Mecambio: http://www.mecambio.net/

[4]

Dabne: http://dabne.net

- Xsto.info: http://xsto.info/
- aLabs: https://alabs.org/
- Semilla del software libre: http://semillasl.net/
- Enreda: http://enreda.coop/
- Gnoxys: http://gnoxys.net/
- Grupo Ikusnet

[5]

Some of the projects:

- http://sindominio.net (ES)
- http://autistici.org (IT)
- http://samizdat.net/ (FR)
- http://espora.org (MX)
- http://thing.net (USA)

[6]

http://coop57.coop/

- http://www.economiasolidaria.org
- https://madrid.mercadosocial.net/
- http://tangente.coop/

[7]

- Asolif: http://www.asolif.es/
- Esle: http://esle.eus/
- Olatukoop: http://olatukoop.net

[8]

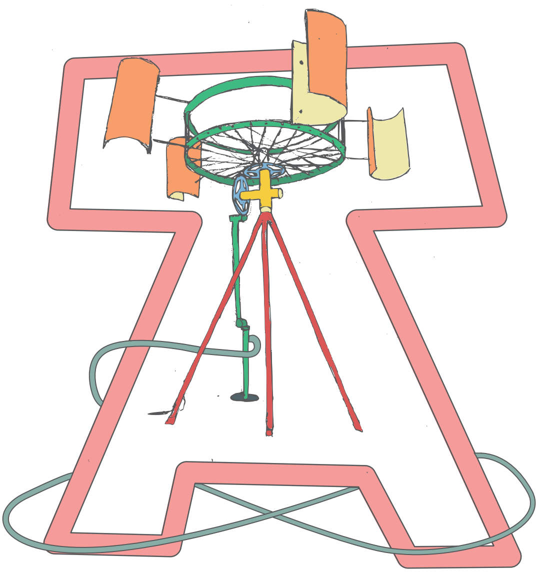
- Deconstruyendo: http://deconstruyendo.net/
- Interzonas: https://interzonas.info
- Talaios: http://talaios.net
- Shareweb: http://shareweb.es
- Reciclanet: http://www.reciclanet.org
- Buenaventura: http://www.buenaventura.cc/
- Itaca: http://www.itacaswl.com
- Saregune: http://www.saregune.net
- Cooptecniques: http://cooptecniques.net/

Some other cooperatives, groups or initiatives working around free/libre technology:

- Latino América Kefir: https://kefir.red/
- Vedetas: vedetas.org
- Cooperativa tierra comun: https://social.mayfirst.org/tierracomun

From appropriate technologies to re-appropriated technologies[1]

Elleflâne



Increased investment in knowledge related to technology development means that much of the technology we use today are commercial goods. Acquisition and transfer of technological knowledge ceases to be an informal process of the commons. Instead, it is subject to the laws and interests of the market, such as patents and intellectual property registers. It is therefore developed mostly by large corporations and nation states. The result is excessive automation, which causes obligatory human displacement, wastes resources and disempowers users through decreasing social knowledge about technologies.

The absence of scientific and technological capacities, the lack of economic conditions that would encourage innovation, and inadequate introduction to technologies generate economic changes in the realities and priorities of countries. The imbalance in the trade in knowledge creates a great difference between countries and individuals and puts those who are net importers of technology – or simply consumers – at a disadvantage in the relationships of economic exchange. The state of dependence and inequality in development is observed when the principal source of technology in a country is located abroad, and when there is no local capacity for generating and adapting its own technology. The import of technologies is not, in itself, necessarily a disadvantage (all countries do it). The bad thing is the absence of correct policies of transferral of the associated knowledge and the dependencies that this generates.

The introduction of an inadequate technology, one that is not understood, to a community, or its adoption by an individual, creates a vicious circle of technological dependence and an economic evolution incompatible with social

needs. That dependence becomes a cause, symptom and consequence of the lack of autonomy. Thus, evolution and technical changes in the economies of the countries of the misnamed "Global South" are substantially different from those observed in the countries of the Global North or Western block countries.

The technological imbalance that capitalism introduces may be key to the creativity for meeting needs through appropriated technologies. If we make the situation reversible again, new and unstoppable processes of autonomy emerge. At the end of the day, what community does not need efficient technology that is understandable and adapted to the specific environmental, cultural and economic context?

Interlinking concepts

Appropriate Technology[1] means technology that is adequate, useable, shared. Appropriate technologies can be high or low tech, they are built and distributed with free licences, GNU GPL, free and open source software and can occur in various fields of action from agriculture, permaculture, gardening and construction to communications, health and education.

The term originally emerged from the Anglo-Saxon environmentalist movement during the 1973 energy crisis. In his book, "Small is beautiful"[2] the British economist E.F. Schumacher promoted the value of technology as health, beauty and permanence. In this sense, appropriate technology is best suited to the environmental, cultural and economic context; requiring few resources; implying the least costs; with a low environmental impact; low levels of

maintenance; created using local skills, tools and materials; and that can be locally repaired, modified and transformed.

The term appropriate, as a synonym for adequate, can generate confusion. An expensive technology could be the most adequate for a healthy community with the capacity to pay for its maintenance, thus activating economic flow and concentrating it on reinforcing the direction of those with most power.

In terms of intermediate technologies, these can also be appropriate. They tend to be much less costly than the prevailing technology, and be built using materials and knowledge available locally, easily bought and used by people with little access to resources. They can increases production whilst minimizing social dislocation.

"Slow Design"[25] is an holistic design focus that takes into account the broadest range of material and social factors, including short and long term impacts. In "Slow Design, a paradigm for sustainable living", Alistair Fuad-Lucas develops sustainable design, balancing sociocultural, environmental and invididual needs. The concept is applied to experiences, processes, services and organisations. It is a road to the dematerialisation necessary for sustainability in the long term. It seeks human well-being and positive synergies between the elements of a system, celebrating diversity and regionalism.

Re-appropriated technologies mean rethinking technologies we need from a political position. It means placing technology at the centre of life, within a transversal axis where other disciplines such as ethics, social problems or the environment can also be found. It seeks to integrate them all into a whole, with a view to preserving and defen-

ding life against power, so that it is not oppressed. When we place technology at the centre we don't necessarily build a technological world like the current one, filled with dependencies and frustrations and ties that upset the balance between the powerful and the oppressed.

If our desire is to bring about social change towards a more sustainable, collective and communal society, we must change the means, the resources and the relationships that currently sustain society based on economic interests. We must return to ourselves, individuals and communities, women and peoples, the part of our technological empowerment that has been expropriated from us. We must generate a technology, a science, and the their dissemination, that is focused on life – just as it was before the Industrial Revolution. It will be necessary to change the structures and above all those that sustain knowledge, because if the whole system and the processes change, but the the structures and the relationships that form between us do not, then nothing has changed.

Re-appropriated technology has a political determination to fragment the capitalist system, favouring the creation of small, decentralised communities of equality and self-organisation. Re-appropriated technology calls for a less alienated society, more integrated with natural processes. Re-appropriated technologies are implanted by the individuals and communities themselves, not by governments. Such policies cannot be designed without going to the territory, and government work only happens in the management decisions taken in offices. We need re-appropriated technology that incorporates our ancestral traditions in the context of industrialisation, and brings back these technologies and techniques to our daily lives. Ancestral traditions

have an already inherently environmental, sustainable and holistic foundation. We need technologies that create well-being, beauty and community.

Re-appropriated technologies from personal experience

Over the past 10 years I have tried to carry the theory into practice, I have adapted and changed my ways, I have created protocols and free licenses that defend our re-appropriated technologies. I have tried to generate collective workshops where people exchange experiences and skills and which could extend to productive activity that will cover basic needs and enrich the communities.

I have discovered an existing market niche for re-appropriated technologies: one way to describe it would be "in order to be productive and sustainable, a producer of organic walnuts or almonds has no intermediate solution between a nut-cracker and a super machine costing thousands of Euros. Re-appropriated technologies would occupy that space, adapting to the user and to their environment".

Society as a whole, and the majority of social movements, have not defended technology, science or technological sovereignty as a social practice, for the individual or the collective. The debate is marginalised, and little by little, new technologies are introduced into our daily lives, making us more dependent and having little to do with the four freedoms. Thankfully there is always a minority group that reverts or questions this.

In the majority of technological spaces, the majority of participants belong to the patriarchal male gender. This si-

tuation has not changed yet and often that machismo gets more ferocious, because it is not only present in the content, but also in the ways of doing things, in the treatment received, in the general atmosphere, in the working environment. These are marked by competitiveness and egos that are touched only at great risk of being victimized. These macho attitudes are all the more significant because we come from a scene with an understanding of questions of gender, yet people simply don't want to change the existing privileges, or they are afraid of reconsidering them because sometimes it is easier to defend oneself than to do the internal work required. I will give you a real example of a case that happened to me with two crane drivers.

Situation A: We had finished working with an oxygen trailer[35] and they had to take it away with a crane. A man arrives. He puts some straps around the tank which, when they are tightened, mark a small bulge in the trailer, which is made of multiwall polycarbonate. I said to him:

“Excuse me, it would be better to put a cloth under the straps so that they don't mark the trailer. That way it will arrive to my client in a perfect condition.”

“Don't worry, it is fine like that. It's fine” He says, without listening to me.

I wait 30 seconds to answer him.

“Hey, put a cloth, it's no trouble.”

“You'll see how much they mark it in the ferry. This is nothing” He is still not listening to me.

A minute of deep breathing, and I think, I am the client, if I tell him to put a cloth under it, he should just put a cloth under it. Why so stubborn?

“I'm sorry, but it is better if we put a cloth”. Finally, with gritted teeth, he does it.

Situation B: My car broke down in the middle of the mountain when it was terribly cold, and I was waiting for the tow truck to arrive. The truck driver arrived and she told me that my breakdown could be fixed if we took out a tube. She could not get it off because her hands were freezing, and my hand unconsciously moved to help her. OK, perfect. She was not shocked, she did not say I was getting in the way, she just said thank you and we tried to remove it together.

The intransigent attitude in situation A does not happen with all men, nor the contrary with all women. Rootless, competitive, intransigent, oppressive, unequal attitudes belong to patriarchy and we can all be victims of them whatever our gender. Technology and science, as tools of power, advance according to the directives of patriarchy and capitalist society.

Thus re-appropriated technologies should be something more than the technological objects and the sciences in themselves, they should also be the set of relationships that emerge around those objects. Could re-appropriated technologies be manufactured in a workshop with totally patriarchal ways and attitudes? I think not. It makes no sense.

It is necessary to put technology at the centre of life, speak of cranks and pistons, as we would speak of kitchen recipes. That is what Jineology does[33], it does not separate the object from the subject, it mixes them within a healthy relationship, not as something external, but as something that is mutable and can always be improved upon.

Another nuance of re-appropriated technologies lies in how they are applied. If we take similes from everyday life, we can simply make our bed, or we can shake the blankets out of the window, leave them to air in the sun, brush the

mattress to remove creases. Behind all these steps are techniques to improve our lives. Another example would be in the application of moisturising cream. It is one thing to just wipe over it with your hand, and a very different thing to carefully apply it with small gestures, the effects are far greater.

It is the same with everything. Everything has techniques and science behind it. Learning these small habits is not so hard. In order to incorporate sciences that improve our lives, and make them habits, it is necessary not just to do, but also to understand why we are doing it that way...

Naming some re-appropriated technologies

In the field of **construction** there are a wide diversity of techniques: Adobe, Super Adobe, Clinker bricks and Corncob insulation among others. All are made with local materials that are relatively cheap. Architecture for Humanity[10] follows consistent principles with appropriate technologies, aimed at people affected by natural disasters.

In the field of **energy**, Amory Lovins' term “soft energy”[12] describes renewable and appropriate energies. These tend to be introduced into isolated communities and places with low energy requirements. There are off-grid designs[11] that are not connected to mains electricity. The high costs of the initial investments and training for maintenance need to be taken into account. They use solar panels, which are initially expensive but simple, wind generators or microturbines in waterfalls, and this energy is stored in batteries. Biobutanol, biodiesel and vegetable oil can be appropriate in areas where vegetable oil is abundant and cheaper than fos-

sil fuels. Biogas is another potential source of energy, particularly where there is an abundant supply of organic waste.

In **lighting**, the Light Up World Foundation[13] uses LED and renewable energy sources, such as solar cells, to provide light to people with little resources in remote areas, to replace dangerous kerosene lamps. The Safety Lamp[14] is a kerosene lamp designed in Sri Lanka, that has a metal top and two flat sides to stop it rolling if it is knocked over.

In **food preparation**, intermediate technologies are used to reduce the labour required by traditional methods, for example, the Peanut Peeler in Malaysia. In kitchens, fair kitchens, smoke reducers and efficient stoves save time, reduce deforestation and are beneficial for health. Briquettes[15], developed by the Legacy foundation[16], transform organic waste into fuel. Solar Ovens are appropriate in some areas, depending on the climate and on local cuisine.

In **refrigeration**, the pot-in-pot refrigerator[17] is an African invention that enables them to keep things cool without electricity for far longer. This is of great benefit to the families that use it. For example, the girls who sell fresh shellfish in the market can leave the shellfish in the device while they go to school and go to the market later.

In **water**, the Hippo Water Roller[18], enables more water to be carried with less effort. The Rain Water Harvester requires an appropriate storage method, particularly in dry areas, and the Cloud Collector is excellent for areas where rain is scarce. In Water Treatment, high standards must be applied when water must be purified before use. Ground water could be could be clean enough, depending on the depth and the distance from sources of contamination such as latrines; rain water can be clean if the area where it falls is

free of waste. Nevertheless, it is advisable to treat it to remove possible contamination. The principal processes are: filtering, biofilm, sedimentation, heat, UV light, and chemical disinfection using chlorine.

Soft-sand filters provide high quality treated water through a simple operation, used both in healthy nations and poor communities. Crushed Moringa oleifera or Strychnos potatorum seeds can be used as coagulants, impurities are easily removed by sedimentation and filtration. Ceramic filters, made of clay mixed with an organic material such as coffee, are found in many homes in South America. The LifeStraw[19] is a small device that allows the user to drink directly from dirty water. Cloth filters or solar disinfection are useful at a small scale that requires few jars or bottles.

In **accesibility**, the Whirlwind wheelchair[23] provides desirable mobility for people who cannot buy the chairs used in developed countries.

In **sanitation**, BiPu[20] is a portable latrine system appropriate for disasters. The Orange Pilot project[21] was a solution for the sanitation crisis of urban neighbourhoods, and the low-cost latrines developed in villages in Bangladesh responded to health problems caused by open sewers. Reed beds[22]purify grey water. Ecological sanitation treats human waste in order to protect both human health and the environment, with water being used for hand (and anus) washing, while nutrients are recycled to help reduce the need for artificial fertilizers.

In **healthcare**, the phase-change incubator created in the late 1990s is a low cost way to create microbiological samples. A number of appropriated technologies exist to

benefit public health, particularly the use of clean water in sanitation.

Finally, in the area of **Information and Communications** Technologies, we have the 2B1[5] and the Simputer[6] computers aimed at developing countries, where the principal advantage is low costs, resistance to dust, fidelity and local language support. ILDIS OnDisc[7] uses CDs and DVDs in areas without a reliable connection to the Internet nor sufficient money. Wind-up[8] by Jhai Foundation, makes radio, computer and communications systems autonomous. Mobile telephones can also be re-appropriated technologies in places where commercial providers cannot or does not want to ensure widespread coverage. Loband[9], developed by Aidworld, strips all bandwidth intensive content from Internet traffic and converts web pages to simple text, increasing transmission speed, making it appropriate for slow connections.

Conclusions

No technology is adequate in absolute terms. According to the UNIDO[26] it is a case of "the technology that best contributes to the economic, social and environmental objectives, taking into account the development challenges, resources and conditions for application in each territory".

Adequate technology makes optimum use of available resources in a territory to maximise the well being of the population. Economic sectors with different characteristics make different technologies. Ideally there should be patterns of balanced development, where extracted resources can gradually replenish themselves in equilibrium. Products

should be developed to account for income levels and for the different lifestyles that exist. Needs should be met, not generated. Small scale is preferable to large.

Adequate management is associated with the generation, transferral, adaptation, assimilation and internal dissemination of the necessary technologies to meet social and economic needs, without ignoring the ecological balance. To reach this, there must be consensus, and an organisation capable of integrating a continuous process of technological management, guided by a strategy that harmonises the functioning of the techno-scientific system with the transformation and development of the productive system. This organisation must constantly question and it must be particularly involved in dissemination and education. It is therefore important to be based on local needs, decentralised structures, small nuclei, and communities with stable networks of trust and reciprocity. If there is a major management structure in a country, it should incorporate the needs of these nuclei, from the bottom up. Poor individuals and countries should remember that they have the possibility to have their own voice, and take responsibility for ensuring that their decision making power in terms of their own economic and social evolution is respected in this interdependent world.

1 There is a longer version of this text available in Spanish here: http://elleflane.colectivizaciones.org/wp-content/uploads/2017/02/Tecnologias_reapropiadas2017.pdf

1 Appropriate technology: https://en.wikipedia.org/wiki/Appropriate_technology

2 E.F. Schumacher: Small is beautiful.

5 2B1: http://en.wikipedia.org/wiki/2B1_conference

6 Simputer: http://en.wikipedia.org/wiki/Simputer

7 ILDIS OnDis: http://books.google.es/books/about/The_Transfer_of_Technology_to_Developing.html

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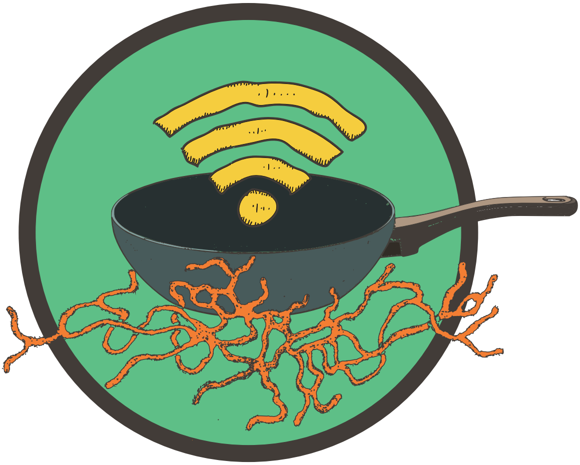
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Part 2:

Technological Sovereignty initiatives

A seed sprouts when it is sown in fertile soil

Loreto Bravo



This is the story of the autonomous and community cell phone network of the native peoples of Oaxaca, a techno-seed that inhabits a communal ecosystem; an ethical-political bridge between the hacker community of the free-software movement and the communities of indigenous peoples in Oaxaca, in the South-East of Mexico. It is a dialogue between the concept of technological sovereignty and the concepts of autonomy and self-determination, where the commons and decolonisation meet; a version of the history of the autonomous and community cell phone project driven by the Rhizomatica collective and managed today by the organisation Telecomunicaciones Indígenas Comunitarias A.C. (Indigenous Community Telecommunications).

It all started with a dream that was named and shared and became a reality.

I recall that only five years ago, when we talked about creating an autonomous and community cell phone network, our circle of friends who lived in the city looked at us in disbelief. However, when this idea was voiced in the mountains of the Sierra Juárez, in Oaxaca, at the heart of a community radio project, it took on a new meaning.

Every story is a voyage in time and space, and the start of this story is a huge welcome sign that reads:

In this community private property does not exist.
The buying and selling of communal lands is PROHIBITED.
Signed the Comisariat of Common Goods of Ixtlan de Juárez

Historical background to Oaxaca[1], the indigenous peoples and "communality"

Oaxaca is the fifth-largest state in the country, with a population of 3 million 800 thousand inhabitants, of which more than half live in rural villages of less than 2,500 people. Of the 2,445 municipalities in Mexico, 570 are in Oaxacan territory, and 418 are governed by the system of usage and traditions[2]. That means that 58% of the total surface area of Oaxaca is social property or commons. In these areas, the authorities are under the community assembly, which represents the exercise of direct and participatory democracy, and a form of self-government recognised by the Mexican political constitution. Sixteen indigenous peoples live side-by-side in this region, which is also the state with the greatest ethnic and linguistic diversity in the country.

Oaxaca is also the state with the most biodiversity, due to the geological complexity of the region, where three long and deep mountain ranges, the Western Sierra Madre, the Sierra Sur and the Sierra Norte, better known as the Sierra Juárez, cross. Because of this accident of geography, the European conquerors never completely managed to subject these peoples who were able to conserve their forms of self-government, which have been adapted and reconfigured over time to fit the current context.

In the mid-1970s and early-1980s, a social movment emerged among the indigenous peoples of Oaxaca and the South East of Mexico in response to the development policies promoted by the government, and the need to defend themselves against the pludering of lands, sacking of resources and forced displacements. This movement deman-

ded respect for their ways of life, languages and spirituality. In this way they built and defended autonomy and built the concept of “Comunality” as a way of explaining life in these areas and villages. In those years they built their first communal companies for forestry resources, spring water bottling, eco-tourism projects and the commercialisation and export of consumable goods, as well as a myriad of community radios. Today this social movement continues to struggle to defend the territory against mining and extraction companies that want to come into the region.

These struggles give life to what the anthropologist Elena Nava has called “grassroots native analytical theories”, where indigenous thinkers such as Jaime Martinez Luna (Zapoteco) and Floriberto Díaz Gómez (Mixe) sought to understand life in community beyond western academic definitions. These thinkers asked themselves: “What is a community for us, the indigenous peoples?”. It is a space of common property, common oral history, common language, its own form of organisation and a communal system for seeking justice. They called this “Communality” as a way of being, living and feeling, considering the mother earth and practising consensus in assemblies as the highest decision-making body, creating a system of positions and responsibilities based on free service, developing collective work as an act of solidarity and reciprocity and the festival, the rites and the ceremonies as expressions of the commons.

Community radios as communal communication companies

In 2006, Oaxaca experienced an uprising detonated by government repression of the education workers move-

ment. This movement gave life to the Popular Assembly of the Peoples of Oaxaca[4] and one of its principal characteristics was the creation of various community radio stations and the taking over of state communications media[5]. Some of these later became Communal Communications Companies[6] with the aim of reinforcing the autonomy of the localities and contributing to achieving the indigenous people's objectives and visions of life, in the form of self determination.

In 2012, more than 30 municipal authorities and indigenous communities delivered a formal petition to the Communications and Transport Secretary (SCT by its Spanish initials) to reclaim access to GSM band frequencies[3]. However, that petition was refused. The current legal framework does not oblige large telecommunications companies to provide communications services in rural areas with populations of less than 5,000 people, although the state regulatory body is obliged to guarantee universal service in rural areas.

The techno-seed

The creation of an autonomous cell phone network is an idea that has been cooking for several years within the hacker community and the free software movement, and there have been a number of prior attempts to make it a reality. For example, in 2008 the idea emerged to use cell phones to defend human and environmental rights and to document the abuses faced by indigenous peoples in the South of Nigeria. The challenge posed by the question of what to do with the resulting documentation produced using cell phones, without using the services offered by the telephone

companies, led to experiments with a software called Serval Mesh, which allowed communication between cellphones without passing through any company's network. The technology proved inadequate for the context. Nevertheless, these concerns led Peter Bloom, founder of the organization Rhizomatica, to want to try a cell phone system when he came to collaborate with the Palabra Radio organisation in Oaxaca[7].

At the beginning of 2011, Kino, a hacker with experience in technologies for indigenous communities in resistance began to research the technological requirements to be able to create these networks. At the same time, the Mexican artist, Minerva Cuevas[8], decided to buy a small kit for $3,000 dollars to create a political-concepual installation in Finland, with the help of Kino, and later donate the equipment for making the initial tests. Later, the lawyer Erick Huerta, specialist in telecommunications and indigenous peoples, met Rhizomatica at a gathering of indigenous communicators, and he began to research the legal implications. At that point, Palabra Radio was providing technical support to community radios, and thus the idea reached Keyla and Israel from radio Dizha Kieru (Our Word), located in the village of Talea de Castro, where, in 2013, the first community cell phone network was finally born.

Before launching the network, Erick Huerta began a dialogue with the state regulatory body to review the spectrum allocation and found a range of GSM frequencies that were not in use and had never been tendered nor granted to the large companies. This enabled the creation of a legal framework in which the communities could operate their own telecommunications networks. In 2014, a 2-year experimental license was granted and in 2016 the organisation of

all the communities with telephone networks formed an association called Telecomunicaciones Indígenas Comunitarias (TIC A.C.), which was granted a social concession of 15 years to be the telecommunications operator in 5 states in Mexico[9]. The TIC A.C. association is structured as an assembly of communities. This created important precedents at a national and international level to defy the hegemonic commercial model of doing telecommunications, as it considers citizens not as client-consumers, but as subjects with fundamental rights, which include the right to communication.

These telephone networks therefore do not commercially exploit the services they offer and they create a quota based on recovering costs to make the network sustainable. This quota is currently $40 Mexican pesos (around $2 dollars) to cover unlimited calls and text messages within the locality and the interconnected micro-regions. Of this quota, $25 pesos remain with the local economy to cover the community's investment costs and pay the internet provider, and the other $15 go to TIC A.C. to cover maintainance of the networks and legal processes.

How do community cell phones work?

A community cell phone network is a hybrid network made up of an infrastructure (software and hardware) and a service over internet that enables the community to become a communications service provider. The hardware consists of a GSM signal transceiver and a controller or computer operating with free software connected to a local internet service provider with a contract for a Voice over IP (VOIP) service. Thanks to the work of the free software and hacker

community, Ciaby and Tele, two Italian hackers, created the software (RCCN + RAI) that makes this network work and give it a simple administration interface.

A community interested in creating its own telephone network needs to have undergone a process of collective decision making within the community assembly. The authorisation of the project is minuted and a committee is named for operating and administering the network. TIC A.C. provides training and support in importing, installing, operating and managing their networks, as well as accompaniment in legal matters. The community should provide the location for the installation and invest around $7,500 dollars in equipment and training. Some communities used municipal funds, others fund raised among the people in the village or asked for a loan.

Benefits and challenges

There are currently 15 networks[10], covering around 50 villages, with between 2,500 and 3,000 users. There are an average of 1300 calls per day, of which 60% are within the village or the Sierra Juárez region. The principal benefits of these networks are related to the facilitation of local communication between residents and at a micro-regional level. It also reduces the costs of communication at a national and international level, thanks to a contract with a Voice over IP service provider, which reduces costs by 60% compared to what companies charge. Due to regulations, there is no public telephone number assigned to each device. Instead, a single number receives all the calls from outside. Then the extension number of the network user is dialled through a voice menu, which in some cases is in the local language.

From the point of view of individuals and families, there is greater interpersonal communication, facilitating the organisation of community life and shared work, calling assemblies and ensuring the system of charges and responsibilities works. It also facilitates issues of security and surveillance within the territory. It is useful in medical emergencies or as an emergency response system in case of natural disasters such as plagues and storms. Finally, it also facilitates commercial relations and plays a role in the processes of production, as it increases access to information and communication with others.

In terms of challenges, we find new and existing gender violences that can be reproduced through these technologies and which have led to the creation of a new mechanism for attending to these violences. That is where ethical-technical problems arise that include the storing and handing over of information. Decision-making regarding these problems should be taken to be debated within the community assembly and be accompanied by a participatory process of reflection that takes into account technical, political and ethical perspectives, so that these new means of communication can continue to exist without prejudicing the communities. These concerns gave rise to the creation of the "Community Diploma for Persons Promoting Radio and Telecommunications" and the creation of a Manual[11] and a wiki[12] to document the production of knowledge.

Technological Sovereignty and Autonomy

Now that we have introduced the autonomous and community cell phone project, I would like to go deeper into the ethical and political discussion that marks the rhythm

of the dialogue between the free software hacker community and the indigenous peoples of Oaxaca. I would like to reflect on the significance of the concept of technological sovereignty as a political focus for the analysis of this kind of initiative. There is no doubt that the community telephone project is the result of the bridge built between these two communities on shared foundations: the commons and decolonisation. Nevertheless, the encounter and the dialogue between the two is not easy. For the hacker community, the starting point is the defence and decolonisation of knowledge as a common good, while for the indigenous communities in Oaxaca, the common good is the communally owned territory that also needs to be decolonised.

Decolonising communal territories implies understanding them as an inseparable whole that includes the electromagnetic spectrum, that common good in the public domain, socially constructed to allow the communities to strengthen their autonomy. To decolonise the electromagnetic spectrum requires technologies and knowledge. This is where the bridge is built between the two communities. Once the dialogue began, we realised that the language also needs to be decolonised.

As we build this dialogue we have observed that the hacker vision seeks common goods from the point of view of the individual, while the vision of the communities do it through the communal. This is the breaking point, which makes it complex for some hackers who have arrived in the Oaxcan territories to understand the lack of individual freedoms that exist in communal life, where the people are not beings divorced from their relationship with the whole. We have also learnt that the same words can have different meanings. It is in this sense that I would like to explain what

occurs with the concept of technological sovereignty, which is what drew us to participate in this book.

In order for this techno-seed to sprout it had to fall on fertile terrain, with history, memory and a communal ecosystem such as that which exists in South Eastern Mexico, a territory that has spend centuries fighting for its autonomy and self-determination. For the indigenous peoples of Oaxaca, the concept of sovereignty is related to the construction of the Nation State which, through its political constitution (1917), sought to absorb the indigenous community's authority figures into the state structure, and as such, repeat the colonial experience.

Until 1992, the Mexican state did not recognise the rights of indigenous people to regulate themselves according to “uses and practices”. The neo-Zapatista movement went public in 1994, subverting the Marxist idea of the national revolution and turning it into a revolution for autonomy, demands for self-government by the indigenous peoples of South East Mexico were recognised. The creative use of communications technologies played a significant role in the process. In order to better understand the idea of autonomy, we return to the beginnings of this story, to our welcome sign:

In this community private property does not exist.
The buying and selling of communal lands is PROHIBITED.
Signed the Comisariat of Common Goods of Ixtlan de Juárez.

This is not a declaration of sovereignty, but of autonomy. Here the construction of power is not based on the sovereignty of the people. Power emanatesf from the territory, that common good, where there is no place for

private property and where technologies play a role in strengthening that autonomy, which is the only mandate that the community assembly should respect and defend.

Thus far it is clear that we are referring to the classical concept of sovereignty and the meaning it has in this corner of the globe. We are far from the concept of technological sovereignty that postulates the development of self-powered initiatives, defined by community life, as a process of empowerment for social transformation. To a large extent, this distance feeds off the mistaken idea of wishing to strenthen the communities with current commercial technologies in order to achieve social change. We need to continue weaving knowledge among hackers and peoples in order to decolonise the idea of technological sovereignty and exercise it from a position of autonomy.

It is for that reason that, when the free software hacker community proposes understanding these initiatives from a focus of technological sovereignty we don't find the echo we expected, because the meaning is different. It appears to be a conflict, although in reality it is common ground: we need to decolonise the language and, as Alex Hache says: “Then, if the idea can be told, it also means that it can filter into the social imagination, producing a radical and transformative effect”.

We are in a good moment to open a dialogue between technological sovereignty and autonomy, understood as it is lived in this corner of the world, among the indigenous peoples of South East Mexico.

1 https://en.wikipedia.org/wiki/Oaxaca

2 https://es.wikipedia.org/wiki/Sistema_de_usos_y_costumbres

3 https://en.wikipedia.org/wiki/GSM

4 https://en.wikipedia.org/wiki/2006_Oaxaca_protests

5 Un poquito de tanta verdad: http://www.corrugate.org/un-poquito-de-tanta-verdad.html

6 Loreto Bravo. "Empresas Comunales de Comunicación: Un camino hacia la sostenibilidad". Media Development: 4/2015 WACC. http://www.waccglobal.org/articles/empresas-comunales-de-comunicacion-un-camino-hacia-la-sostenibilidad

7 https://palabraradio.org/nosotras

8 http://contemporaryartarchipelago.fi/exhibition/artwork/15

9 Puebla, Guerrero, Tlaxcala, Veracruz and Oaxaca.

10 List of villages that have telephone networks:

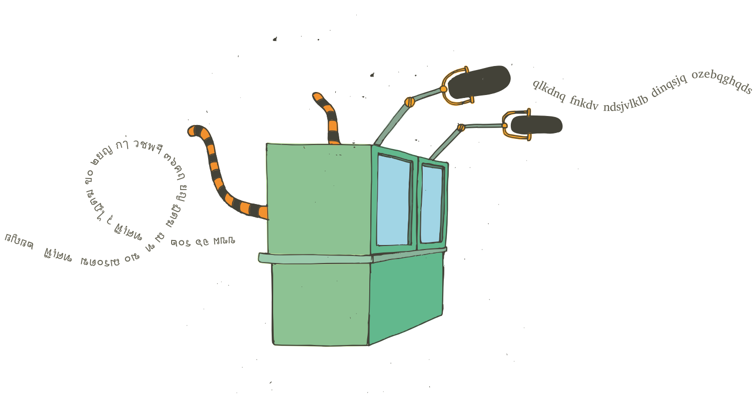
- Villa Talea de Castro (Sierra Juárez)
- Santa María Yaviche (Sierra Juárez)
- San Juan Yaee (Sierra Juárez)
- San Idelfonso Villa Alta (Sierra Juárez)
- San Juan Tabaa (Sierra Juárez)
- Sector Cajonos: Santo Domingo Xagacia, San Pablo Yaganiza, San Pedro
- Cajonos, San Francisco Cajonos, San Miguel Cajonos, San Mateo Cajonos (Sierra Juárez)
- San Bernardo Mixtepec (Valles Centrales)
- Santa María Tlahuitoltepec (Mixe-Alto)
- Santa María Alotepec (Mixe-Alto)
- San Jerónimo Progreso (Mixteca)
- Santiago Ayuquililla (Mixteca)
- San Miguel Huautla (Mixteca)
- Santa Inés de Zaragosa (Mixteca)
- Santos Reyes Tepejillo (Mixteca)

11 https://media.wix.com/ugd/68af39_c12ad319bb404b63bd9ab471824231b8.pdf

12 http://wiki.rhizomatica.org/

Simultaneous interpreting using radio frequencies

COATI, Collectif pour l'autogestion des technologies d'interprétation



Introduction

« "International solidarity and global protest is nothing new. From the European-wide revolutions of 1848, through the upheavals of 1917-18 following the Russian Revolution, to the lightning flashes of resistance nearly everywhere in 1968, struggle has always been able to communicate and mutually inspire globally. But what is perhaps unique to our times is the speed and ease with which we can communicate between struggles and the fact that globalisation has meant that many people living in very different cultures across the world now share a common enemy."
– Do or Die, Issue 8, 1999

"Our resistance is as transnational as capital"
– Slogan of the global day of action against capitalism, June 18, 1999

As the economy has become increasingly transnational, so too has resistance to its devastating social and ecological consequences. International resistance means coming together from different struggles and cultures to meet, share ideas and experiences, and coordinate actions. Crossing borders and cultures in this way means communicating across language barriers, and language is about power.

Many international gatherings take place in the more 'international' languages, such as English, Spanish, Russian or French. Many people speak these languages, but that is because they have long histories of imperialism: they were forcibly, and in many cases brutally, imposed on people from many different cultures, devouring local languages and eradicating cultural diversity. They can help us communicate, but they are often not people's first language, and

people participating in a foreign language may be unsure if they have understood everything correctly, or they may lack confidence about expressing themselves well. Events are often dominated by people who feel comfortable with the majority language. Thus, native speakers of colonial languages (particularly English) have dominated history and they continue to dominate our meetings.

If we are committed to diversity, grassroots participation or consensus decision-making, we must raise awareness of these power dynamics and processes of inclusion and exclusion. Increasing the equality of our communication and creating space for speakers of other languages is an important political struggle. One valuable tool for dealing with this is providing interpreting between languages so that everyone can communicate in a language they are comfortable with.

Interpreting between two languages is an art as ancient as languages themselves and requires no technology. However, for interpreting to be practical in larger meetings in several languages it must be simultaneous. Multi-language, simultaneous interpreting cannot happen without technology.

A history of alternative interpreting technologies

The first attempt to use technology to facilitate this type of interpreting seems to have been at the Nuremberg trials after the Second World War, using a system based on the telephone[1]. Since then, the technology, usually based on infrared transmission, has developed alongside international organisations such as the UN and the EU. It is now very

advanced, but extremely expensive and out of reach for most activist spaces and social movements. Even if an event can afford to hire some equipment, the costs soon become astronomical if you want to work at any kind of scale.

The European and World Social Forums (ESF and WSF) that took place between 2001 and 2010 were international events on a massive scale, with up to 100,000 participants and hundreds of parallel meetings every day. Initially, interpretation was very limited, due to costs, but some people quickly realised the importance of languages to the political process. Babels, a network of volunteer interpreters, was born.

Interpreting and interpreting technology became part of the political process. Interpreting is easiest in large plenary sessions, where a few people speak and most just listen. Participatory organising requires working in small groups, where more people have the opportunity to contribute, but this multiplies the interpreting resources required, so decisions about interpreting affect the working dynamics of an event. The prohibitive cost of commercial technology and interpreters limits available resources, and there is no such thing as a purely technical choice. Even if there is money to pay for the service, it is a one-off thing: you give it to a commercial company and it is gone. The alternative is to "Do it Yourself", invest in people and equipment and thus increase the capacities and autonomy of the movements.

At the 2003 ESF in Paris, over 1000 volunteers took part in the interpretation, and every plenary and workshop took place in several languages. However, the technology used was commercial, and the costs were astronomical. Full-scale, commercial interpreting technology has never been

used again in an event of that size. This inspired the first experiments in alternative interpreting technology. Initially, these were based on computers, but digitalisation introduced long delays that confused the interpreters and the audience alike. At the 2004 WSF in Mumbai, India, computers were abandoned for more low-tech, analogue solutions, transmitting through cables and via FM radio. In Greece, a collective known as ALIS (ALternative Interpreting Systems) was formed to provide interpreting technology for the 2006 Athens ESF. Following the blueprints and building on the experiences of earlier groups using analogue interpreter consoles and FM radio transmission, they spent months building enough equipment to cover the entire event.

Athens was the first (and, for Social Forums, sadly the only) time that a large political event fully recognised alternative interpreting technology as a political question in itself and gave it the space and resources necessary to carry out its mission. The result was an unprecedented success. Infrared receivers are extremely expensive devices, jealously guarded by their commercial owners who require participants to deposit a passport or credit card in exchange for their use. In Athens, interpreting was made available to anyone with an FM receiver, and versions of that system are still being used by social movements today, allowing people access to interpreting through any household radio or smartphone.

Nevertheless, despite the success of Athens, the experience of working with the Social Forums was generally that the best efforts of interpreters and technicians were rendered completely ineffective by inadequate political and tech-

nical support at the events. Furthermore, there was no support at all between events, when equipment had to be bought or built, stored, transported, tested and repaired. Unlike commercial equipment which you rent for the duration of an event, self-managed equipment remains with you between meetings, and in greater amounts than any particular event may need. People have to be trained in how it works, logistical issues need to be solved and there are administrative loads to bear, all of which requires resources and dedication. The Social Forum process refused to learn that lesson, but other movements have taken it on board.

COATI: The Collective for Autonomy in Interpreting Technology

COATI was founded in Barcelona in 2009, bringing together people who had participated in anti-capitalist and anti-globalisation movements. We had supported the peasant farmers of Via Campesina in the creation of the movement for Food Sovereignty. We had volunteered as interpreters – sometimes in very precarious conditions – and seen the value of good alternative technology. We had learnt to organise horizontally and by consensus in the Do-It-Yourself culture of anarchist and anti-capitalist social centres all over Europe. We had built an understanding of technology in the squatted hacklabs and free software communities. We learnt about sound systems running hardcore punk festivals, street parties and independent, community-based radio stations. It was those experiences – and the values of those communities – that inspired the project.

We invited someone from the original ALIS collective to

come to Barcelona and train us in how their equipment worked, and we began to track down as much of the old alternative technology as we could find (most of it was piled up in warehouses, or in forgotten boxes in campaign offices, gathering dust). Our commitment was to increasing linguistic diversity and our plan was to acquire and manage the equipment, so that each event didn't have to solve its technology problems from scratch. However, we quickly learnt that increasing access to interpreting technology was going to require more than just administering the equipment and reducing the costs.

Making alternative technology work for people

The first challenge was to overcome resistance to using alternative technologies, often born of bad experiences people had had with the equipment in the past. Designed within the social movements, the system did not match the quality of commercial equipment. It was built with the aim of drastically reducing costs, using cheap material not specifically designed for audio. The interpreters and the audience alike could be plagued with an electronic buzzing noise that was exhausting to listen to for any length of time.

An important part of the solution was simply treating the technology as an important issue. We trained ourselves. Wherever our equipment went, there was always a dedicated person responsible for operating it. Many of the problems of the past were caused by alternative technology being treated as an afterthought so that no one had time to ensure it was working well. We learnt as we went along. We devoted a lot of time to identifying the causes of problems and modifying the equipment, adding small circuits

to filter and boost signals, and improve the quality of the sound.

The material built by the Greek collective came with no schematics, which was made this considerably harder. Hours of reverse engineering were required before we could make modifications. Now the equipment is almost 10 years old and we are beginning to face the challenge of designing and building new, open-source consoles from scratch. We are very aware of the value of open-source design, and all of the electronic work we have done is fully documented and available online[2].

Making people work with alternative technology

Overcoming technological problems was not the only challenge we faced. Some of the most difficult issues stemmed from the political and organising cultures of the movements themselves. Many groups are based on relatively informal organising and people can be resistant to the discipline simultaneous interpreting requires: people must speak slowly and clearly; use microphones so that the signal reaches the interpreters; and people cannot interrupt each other. Larger networks and NGOs may have more experience of working with interpreters, but they tend to treat it as a mere technical service that should be invisible and not as an important part of the political process. They get frustrated with the demands of solidarity interpreting and alternative technologies for enabling participation and political involvement. However smoothly the technology is working, just having interpreting does not automatically eradicate the power dynamics created by language, and it

must be everybody's responsibility to create space for more minority languages.

Another important part of the work done by COATI has therefore been working to promote the political culture that alternative interpreting technology needs to really work.

Volunteer interpreting

Alternative technology can be used by commercial interpreters, and volunteer interpreters can work in commercial booths. However, in practice the two processes have developed very closely, side by side, and a key element of organising an event is often finding volunteers with the necessary skills to meet the language needs. You can deal with this by finding professional interpreters who are willing to work for free, either out of solidarity, or simply because they need work experience, or because travel and expenses will be covered to exotic places. However, this relationship risks becoming one of cheap service provision, with volunteers having little interest in the political issues being discussed; and the resulting expenses can be high even if the work is done for free.

A large part of our work is therefore helping movements to build the capacity for simultaneous interpreting within their own grassroots environment. The larger an event is, the more complex this process becomes and a whole article could be written just on the political and technical questions involved. Suffice to say that it is a very important issue. We have developed a two-day training for activists with language skills, and we always try to incorporate skill sharing in the interpreting teams we coordinate, putting experien-

ced interpreters together with new activist volunteers in our booths.

Speaking for interpreters

Another important part of changing the political culture has been to raise the profile of language diversity among participants in international events. Wherever we work we try to give a political and practical introduction to the equipment, and provide written guidelines on how to speak in multi-lingual meetings[3]. We encourage people to actively think about the language they use. For example, we ask participants not to speak the majority language during the meeting, even if they could, because it marginalises those who have to rely on the interpreting, leaving them feeling embarrassed, uncultured, and consequently, less inclined to take part. We have experimented with subverting the invisible interpreting model, placing the booths centre-stage and having speakers speak from the floor, thus making everyone aware of the processes involved.

Designing flexible solutions to meet political needs

Interpreting inevitably does impose limitations on what a meeting or gathering can do, and simultaneous interpreting is best suited to quite hierarchical forms of organising such as the traditional conference model. However, we are committed to non-hierarchical organising. We make it a priority to understand a group's methodologies, needs and resources in order to match them to the technological possibilities.

There are two main parts of this process. One is to work closely with event organisers to understand their political aims and help them to understand interpreting and interpreting technology and how they interact with different kinds of facilitation techniques and meeting dynamics. The other is to take a creative approach to the equipment, building little hacks using mixers and splitters, and wiring (or sometimes gaffer-taping) devices together in unconventional ways to make them do what we need.

We have built up a wealth of experience of pushing the boundaries of what can be done to break the mould of the typical meeting format, even in quite extreme circumstances. At the Second Nyeleni Europe gathering in Cluj-Napoca, Romania in 2016 we organised interpreters and equipment to work with experimental participatory methodologies with over 400 participants in more than nine languages. We are now working on a technical and political guide to facilitation with multiple languages.

The biggest challenge: Decentralisation

Over the past seven years we have worked with many groups and movements to help solve the language requirements of their international events. Very often this means us providing all the necessary technology and technicians, as well as coordinating the volunteer interpreters for the event. However, we also collaborate in mixed solutions, and help organizations to develop or acquire their own equipment, and to build capacity to meet their interpreting needs. We believe that real technological sovereignty means that groups don't have to rely on 'experts', but become empowered to meet their own technological needs. One of our

biggest projects has therefore been the development of simple, easy to use, build-your-own open-source hardware.

The Spider: An open-source hardware project

The simplest form of interpreting technology is probably the “Spider”: a small box you plug a microphone into, with sockets for headphones to take the interpreting to the audience via cables, making it look like a big, lanky spider!

Compared to FM radio or other wireless transmissions, Spiders are cheap and very easy to operate. Spiders are a small-scale device, only really suitable for smaller meetings, although in extreme situations we have used them at events with hundreds of participants! The real scalability of the project lies in the fact that any organisation can have a few, making them completely autonomous for many of their interpreting needs.

Years of experience went into developing and producing our own open-source version of the Spider, with many improvements, such as modular extensions you can use to add listeners in groups of up to twelve.

We build our Spiders by hand, for our own use and for sale. We also sell make-your-own kits at cost price. All the schematics, parts references and complete building instructions are published online[1] under the GNU General Public License.

Training new tech collectives

Since the Spider project went online, we have run a number of electronics workshops, training people to build their own spiders. We also know of at least one group, in

Ukraine, that has built Spiders without any contact with us. We invite technicians from other groups to join us at large events and see how the technology works in the field. We have taken part in a number of skill-sharing weekends, helping new groups to get started. We have participated in the creation of new collectives using Spiders and inventing their own interpreting solutions in Romania[4] and Poland[5], as well as an international collective, Bla[6], which has Spiders and small radio kits that travel to different events around Europe.

Conclusions

Sovereignty in interpreting technology has come to mean many things to us. In the first instance, in order to extend access to interpreting technologies to resistance movements, it was necessary to reduce the costs, and develop high-quality alternative solutions that really work and are sustainable in the long-term. However, that was not the only challenge. A lot of political work still needs to be done to overcome people's resistance to using interpreting technology to open our meetings and gatherings up for speakers of other languages to participate on an equal footing. There is a need to share skills and knowledge about the technical aspects of interpreting and how those can interact with different kinds of facilitation dynamics. Open-source research and development that aims to maximise technological sovereignty must be accompanied by capacity building and political mobilisation, in order to increase people's awareness of why and how they should use the technology, as well as to empower them to really control and create their own solutions.

For more information about COATI and the work we do please see:

website: https://coati.pimienta.org
contact: coati@pimienta.org

1 https://www.pri.org/stories/2014-09-29/how-do-all-those-leaders-un-communicate-all-those-languages

2 All the modifications and schematics we use can be seen here: https://coati.pimienta.org/electronics

3 Our written guidelines can be consulted here: https://coati.pimienta.org/documents/

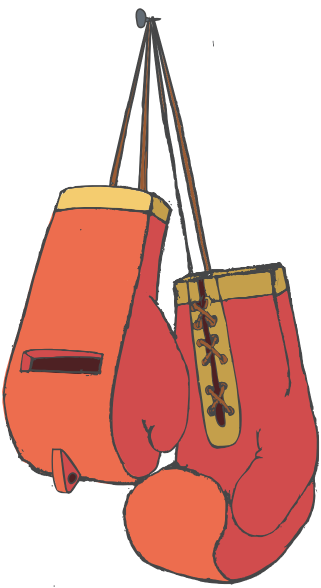
4 Grai Collective, Romania: grai@riseup.net

5 Klekta Collective, Poland: klekta@riseup.net

6 Bla Collective (international): https://bla.potager.org

Whistleblowing, a double edged sword

Claudio Agosti



Whistleblowing is an ancient practice that has been called many names and is not ethically bound. It can be the link between the source and the journalist, or between the snitch and the military. In both cases, a reserved information goes in the hands of a person considered trustworthy, which transforms this information into an action. Wikileaks and Snowden have made whistleblowing come back full powered, showing how digital communication can simplify the process and protect the integrity of communications between sources and recipients. Anonymity and encrypted storage technologies have propelled this revolutionary framing.

I say framing because whistleblowing does not have an ethical value per se, what identifies its nature is the political cause that motivates it. So if you are a single person going up against a powerful organisation, like the US state department, the intelligence community, the financial system, or the Vatican, you might be remembered for your heroic behaviour, like Chelsea Manning[1], Bill Binney[2], Herve Falciani[3], Paolo Gabriele and Claudio Sciarpelletti[4]. Although becoming famous in this field often means you have been caught, denounced or that you are in the run, hopefully those outcomes do not apply to all whistleblowers, as we will see.

Your informations can empower the citizen in understanding the power dynamics in play, but institutions themselves can also take advantage of those. If the ultimate goal of whistleblowing is making society more transparent in the interest of society itself, this might sound fascinating if you want a revolution, but it can be also very irresponsible for other reasons. Nobody really wants a society in which everyone can be a spy or an anonymous snitch.

Such a society would just strengthen the currently established institutions in power. Regimes in which a person can be economically rewarded for snitching on other citizens exemplify such misuse. Added to that, any structure with some type of power, even your small NGO or political team, benefits from agreements and contracts which are kept private because they require some level of confidentiality. No resistance would be possible without well kept secrets.

Transparency for the State (or for "who has enough power to shape our reality") and privacy for the rest of us? This could work as a nice simplification, but then we should respect this separation in all our political actions and never, ever, expose any private information of other citizens.

I worked with the globaleaks.org team on the creation of its software platform. Our dream, was to create a "portable wikileaks" that could be unleashed in every city, media and public company. After all, white collar crime and other corporate misbehaviour can't be detected, neither understood, without an insider. My experience comes from deploying it for different groups with different needs. Departing from the made up story below, we will see how digital whistleblowing can enhance your political actions and what you should take into account when planning your leak initiative.

Once upon a time...

There was a river getting heavily polluted. Some facility operates nearby and it is clear they are disposing chemical waste. There are rules, periodic checks, policies – but at the end of the day, flora and fauna are getting poisoned. Someone inside must know, but you don't know anybody

who works at the facility.

Your team creates a campaign and solicit sources, but criticism starts because your Wordpress blog for receiving the leaks is not very secure. Therefore, you set-up a proper platform (SecureDrop or GlobaLeaks[5]) that can guarantee anonymity for the source, and encryption for the information exchanged. Even a seizure of the server can't compromise the security of sources nor your active investigations. This is a privacy by design setup. However, despite the platform pick, you know that your initiative is shaking some established power and you fear retaliation. You develop a mitigation plan based on splitting responsibilities among a larger group composed of environmental lawyers, local journalists and some foreign analyst who also receives the leaks. This way, if a person get stopped, the initiative will keep running. However, despite all this security management, after two months you have received zero leaks.

Sadly, we are closed in our bubble, our circles. We try to communicate with our intended audience, but despite our efforts at the end of the day we talk only to persons similar to us. So, nobody working at the facility was in your comfort zone. You've to hunt these sources, advertise them personally or massively. In the beginnings, nobody understands why your cause is important. Then you re-frame your message, making clear why it matters for the environment, why their role is important, and after some weeks, the first timid source might arrive.

This is just the beginning and when the first article is published, you know this story will be read by facility employees because they talk about their company. And then

you explain again why their role matters, how they can send anonymous tip-offs, that they are not the first and can do it safely. Gradually, step by step, gaining trust from persons with different values and knowledge, you are getting the flow of information that might be transformed in political outrage, strength, actions. After a while, society takes action and the facility has to take responsibility for its environmental impact.

This example can take place in different contexts in which abuses happen. But let's see if all the outcomes of leaking are positive and corrective or if they can be damaging as well?

Practical steps

Suppose you are lucky enough to receive an anonymous document detailing a lobbyist plan to influence the new policy about environmental preservation. The first urge might be to publish it immediately. Let citizens make their own mind, and check if the information contained in the document fits their own knowledge. Some readers might confirm, deny, or integrate new information within the original source.

But this is not journalism and it is not information, it is just a naive action of unmediated radical transparency. Ten years ago, WikiLeaks used to work that way. It was a platform in which sources could upload documents and have other readers perform its analysis, investigation and publication. In 2007, it was a common way of doing things, until Buzzfeed[6] does the same in 2017, publishing an unvalidated report about Russians and Donald Trump.

However, such release methods are dangerous and extra tempting if you are operating in the information ecosystem. The speed of messages does not let people evaluate the information in its context, nor understand how much of it is plausible and which are the parties involved. Nowadays only the title, the subtitle, and maybe a small percentage of the actual content is actually spread. It is impossible to ask for a public revision and when unvalidated news goes viral, the effect is to split the audience into two polarized groups.

Trust is key because a leak might not lead to changes. It can be ignored, silenced, accepted as daily life. An anonymous document should be published, but it is expected that a trustworthy person, such as a mainstream media journalist, a visible activist or human rights defender states: "I know the source, I vouch for the source, I'm protecting the source".

Leaks are information you might use as accountable tools for transparency. They can also be legitimate research tools for civil society. Results can feed into scientific or political processes. Change is not something that can be implemented by technology. On top of technically defined properties, you need to implement your political and ethical values.

Whistleblowing powered campaigns as processes

The best validation method we have seen so far is independent research. If the investigation hasn't lead anywhere, then the leak has to be considered unconfirmed. You might also need to interact with the source in order to get leads. Luckily, some platforms can keep sources in the loop in order to confirm their submission, request updates, or answer

questions raised during the investigation. On the one hand, you can ask for more details. On the other, you will still have to evaluate the proofs, because you cannot rely only on the source. Publishing leaks without understanding the agenda and motivations of the sources can mean being instrumentalised by them. Keep in mind that leaking has been used many times for organising smear campaigns.

Having trustworthy partners among the recipients also greatly helps the initiative. It ensures that the revision, source management and outreach will not be done by only one group, but will be shared through partnerships with local lawyers, journalists, policy makers, researchers. Then your group has to transform investigated and validated leaks into stories. Passionate and understandable stories to engage people and create mass mobilization. Think about the process applied to the Edward Snowden leaks where for three years now there is constant journalistic revision and gradual publications.

One key factor for a successful campaign is to remain focused on a subject, a topic, a challenge. Do not vaguely call for evidence about corruption at large. Frame your specificities in your landing page and targeted towards your audience. Confirmed content should be clearly marked and more visible. And every time you have the opportunity to write for the media, remind to the readers that a safe box for tip-offs is available, because articles are generally read by people involved in the issue.

It is useful to measure what is happening as much as possible. Keep track of the event and monitor its social media presence in order to understand how to improve your campaign based on results collected earlier. By sharing these measurements, you will help other initiatives like yours.

Don’t be afraid of your enemy and keep building open data on how your organisation works. Do not address the people, but the numbers, concentrate on the results, achievements and statistics.

Dangerous paths where you should be cautious

An initiative has a time window of existence, it has to define what it is aiming for, what is its next milestone and how it is going. Having unmaintained initiatives might confound future potential sources. If your activity stops, make it very clear, because nothing sounds more sketchy and worrying than a whistleblowing initiative that accepts tips but fails to publish them.

Putting a source at risk is irresponsible, and this can happen if a story contains too many identifiable details. Files need to be sanitized and metadata need to be cleaned, but you also need to ask the source about how many other persons got access to the same information. Depending on the amount (two, twenty or two-hundred) aware of the same secret, different justifications will need to be made up.

It is easy, when you're part of a conflict and you are facing an adversary, to assume that all the persons collaborating with it are your adversaries too. That is a dangerous path. Do not aim at leaking personal information about “low-rank” workers, for instance, because you might just expose innocents to responsibilities they don't own. Just imagine if similar actions were used from an established power to treat a minority or a marginalised group. If you are looking for social justice, spreading whistle-blowing as a way to solve political struggles might just backfire against your agenda.

Attacking an individual is a fascist behaviour, and it has to be stigmatized despite the political reason sustaining the initiative. What has to be exposed is the corruption of a system, not the misery of life. Whoever does the release has the mission also to protect low ranked individuals from public exposure. Otherwise, whistleblowing will just enable a "Kompromat"[7], a set of information that might embarrass someone or be used for blackmailing individuals. Every faction in play can make use of it, so it is better to share strong ethical values in order to judge the democratic quality of initiatives.

In theory, a whistleblowing initiative is intended to empower a weak group to shed light ona secretive oppressive organisation. But what defines power, oppression and secrets depends on contextual and subjective evaluations and thus can be rarely used as an assessment and evaluation criteria.

As a conclusion, I really believe whistleblowing can address and make good use of lot of disgruntled employees and the ethical remorse that some ex-workers experience. Being able to empower these voices and transform their stories into changes is a vector of leverage we have to explore, maybe now more than ever.

Successful cases of GlobaLeaks adoption

Interesting experiments have been created by communities around the world. Since 2012, the GlobaLeaks team is keeping track of a list[8] but some of the most notable are the submissions collected by WildLeaks, a platform against animal poaching[9]; the Italian Investigative Report-

ing Project Italy collecting evidence of public officers on Couch-surfing raping their guests[10]. I mention this just because there are so many corruption cases. The Spanish X-Net[11] was able to prove the complicity of bankrupt bankers and the state and made a theater play out of it. PubLeaks, with the participation of the biggest Dutch media, made a book with all the revelations received in 4 years, and MexicoLeaks[12], was apparently so frightening that journalists were fired even before the leaks began to flow. And now is up to you. What's the Pandora's box you want to open?

1 The most inspiring whistleblower of the last years perhaps? https://en.wikipedia.org/wiki/Chelsea_Manning

2 https://en.wikipedia.org/wiki/William_Binney_(U.S._intelligence_official)

3 https://www.theguardian.com/news/2015/nov/27/hsbc-whistleblower-jailed-five-years-herve-falciani

4 In 2012, Paolo Gabriele and Claudio Sciarpelletti, working for the Pope, fed journalists with internal and reserved documents about the Vatican management. This lead to Pope Benedict XVI to step down (an event that was not happening since 600 years)

5 GlobaLeaks https://globaleaks.org and SecureDrop https://securedrop.org

6 https://www.washingtonpost.com/blogs/erik-wemple/wp/2017/01/10/buzzfeeds-ridiculous-rationale-for-publishing-the-trump-russia-dossier

7 https://en.wikipedia.org/wiki/Kompromat

8 https://www.globaleaks.org/implementations

9 https://wildleaks.org/leaks-and-reports/

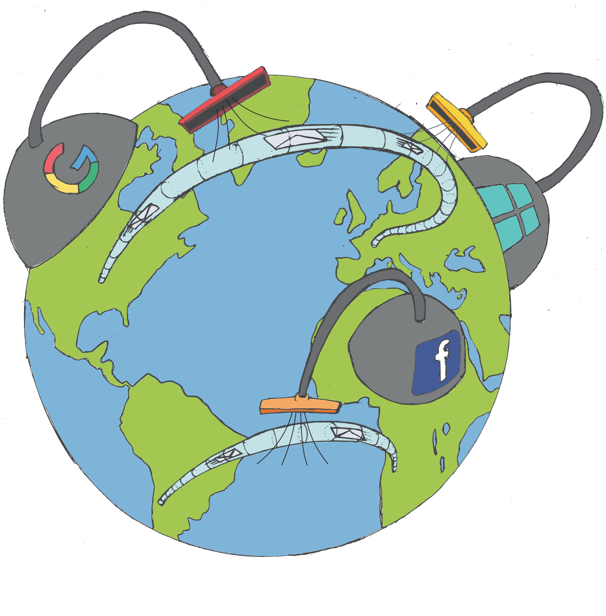
10 https://www.theguardian.com/world/2015/may/29/couchsurfing-rapist-dino-maglio-italian-police-officer-rape-padua

11 https://www.thenation.com/article/simona-levi/

12 https://www.occrp.org/en/daily/3776-mexicoleaks-journalists-fired-after-joining-whistleblowing-alliance

Encrypting mails with usable tools: The mass adoption of encryption technologies

Kali Kaneko



Encryption is the application of mathematics to ensure that our information is only accessible to the persons or machines we decide to share it with. Encryption has a long history. Protocols for sending encrypted information without having previously agreed on a shared secret with the other party (for deciphering encrypted data) have been around for roughly 35 years. The landmark Pretty Good Privacy program, often abbreviated as PGP, made strong email encryption with guarantees of confidentiality, authentication and integrity widely available to users and developers in 1991[0].

The relative popularity of PGP and its subsequent standardization is often depicted as a victory for the cypherpunks (cryptography activists) during the First Crypto Wars[1]. So, what are the issues that still prevent the adoption of email encryption by the critical and large masses? Why couldn't Greenwald, the respected journalist, encrypt an email when he was contacted by his source Snowden, the analyst working for the NSA[2]?

To answer that, we have to look first at the architecture of internet services, then the economy of surveillance, and finally some historical usability failures.

Email in the times of surveillance capitalism

Email is an open, federated protocol that has been recentralized by big service providers. These companies exploit economies of scale that lead to the commoditization of email. Negative externalities from the commoditization of email include the arms race that evolved to prevent the spam industry from sending a large amount of unsolicited and often fraudulent email to users.

In the early days of the internet, anybody could run an email provider. The past decade, however, has seen a drastic reduction in the number of email providers. Not only few individuals and collectives run their own email servers, but less and less people know that it is even possible to do so. Email has become another example of technology that is "just supposed to be there". The message seems to be that vital infrastructure is not something that you run for fun. Something similar is happening with Instant Messaging[3].

Losing the battle for open, federated architectures also means losing control over the communication infrastructures we use. The increase in monopolistic practices leads to a lack of interoperability between providers that puts up a barrier of entry for new email service providers.

Monoculture is an imperative for centralized control: it means that an adversary only needs the cooperation of a single player to compromise the private communications of millions. Email is not only about messages: today it is one of the last technological lines of defence on the internet for privacy-aware and localised alternatives for Identity Provision. Legitimate email service providers can still choose to allow their users anonymity or pseudonimity, refuse to track or sell their data, etc.

We increasingly see how mobile devices, instead of email accounts, are required for bootstrapping communication with your contacts. The phone has become the gateway to Facebook's walled gardens in many countries[4]. The lawyer and privacy advocate Lawrence Lessig warned that the Big Regulatory Loop is closing between the Industry and the State[5], a big feat for those "weary giants of flesh and steel" that we didn't use to fear.

Governments and corporations race towards the deployment of pervasive surveillance. When big powers invest so much effort into eroding the fundamental rights of individuals and communities to decide upon the scope of their communications, building - and using - privacy tools becomes a moral imperative. The right to whisper is an irrevocable and fundamental right that is being taken away by force. Its criminalisation and disappearance has a profound impact on our capacity to exert our human rights and shape democratic societies.

We failed to empower people to encrypt

Strategically, email might seem an odd choice nowadays, in an ever changing technological landscape that leans more and more towards mobile applications, and where most users had their first experience on the internet already mediated by the Big Silos. Email is often criticized as an obsolete technology, because its architecture makes it hard to encrypt messages in a way that hides who is writing to whom about what.

Even if more interesting and attack-resistant technologies appear in the future[6], email will stay around at least for a while. Email is the asynchronous medium we have and that needs to be protected. Millions of emails are still sent daily without encryption, and emails with unverified senders are still used for devastating phishing or ransomware attacks.

It is hard to assess whether it is only a fundamental usability problem that we're dealing with, or if on the contrary we are facing a general loss of interest in: 1. email as a tool; 2. privacy and security in online communications; or 3. a

combination of the above.

Commercial-level storage is cheap, and providers that rely on the exploitation of silo data and metadata can afford to give it away “for free”. It’s obvious that these providers do not have a real incentive for encryption, because it would undermine their revenue streams. Even providers that support encryption profit from traffic analysis.

It has been shown that users are willing to pay an extra cost for services or apps that respect their privacy[7], yet privacy-aware email providers have to compete against the major market players who exploit economies of scale to offer a baseline of the 15GB of “free” storage, high standards of reliability, speed, etc. In other words, there are many critical users who could contribute to the costs of privacy-aware email providers, but usability and operational costs add up to making it very hard to compete against the established monopolies.

In this sense, any serious attempt to provide alternatives must address the sustainability of technopolitical projects such as privacy-aware email providers.

It's also a problem with tools for nerds

The “scratch your itch” attitude of the Free Software community just doesn't cut it any more for mass adoption. Self-discipline and quality are key for maintaining a sustainable community around pleasant, usable and effective software.

Given the humongous amount of resources that Capital has invested in the cybernetic control of the masses, current user expectations about usability are high. Interacting with

digital tools should only require a very small amount of cognitive effort. New technologies that defy too many conventions (visual language and best practices such as common metaphors, established interfaces, features such as multi-device syncing, mobile first design, etc.) erect barriers against their adoption. The eternal request from users to developers for the well known "wall" or "like" features in new technologies shows that arbitrary signs have became normalized.

Nonetheless, oversimplification at the cost of irrevocably hiding complexity from the user is not the only available option – and it often backfires. One could dream of an interface that makes everyday tasks simple, but allows users to explore further possibilities as they learn more.

Nerd-driven development also shifts focus whenever a new shiny technology emerges. That might partly explain why some technology stacks just languish and rot. We need to cultivate excellence even in pieces of technology that don't get the excitement associated with new developments. If we want crypto to spread outside the techie ghetto, half-baked and unmaintained tools that are unusable should be abandoned. Arrogance about what users need to know or do before accomplishing the most basic task must be held under control.

One example of broken tech is the Web of Trust system used for identifying the keys associated with a given email address. Didactic attempts to explain its necessity for safe encryption practices have failed along the years, perhaps because it was based on broken assumptions from its inception[8].

Looking at possible solutions

Many projects have blossomed in the post-Snowden era. I mention here one I am contributing to, and others that I consider interesting, both in terms of working software and evolving protocols. My focus is on initiatives that build interoperable solutions on the top of the existing email infrastructure using the OpenPGP standard. I also briefly mention some new silos that try to monetize on the crypto fuzz.

Bitmask and the LEAP Encryption Access Project

LEAP aims to develop encrypted email services that are easy to deploy and clients that are simple to use[9]. LEAP implements opportunistic email encryption, which is a transparent process that requires only a little cognitive effort from users, and low maintenance costs for providers. LEAP software may enable many federated providers to enter the email provisioning space by lowering the technical and economical costs.

On the server side, the LEAP Platform is a set of complementary software packages and recipes to automate the maintenance of LEAP services. Its goal is to make it as painless as possible for sysadmins to deploy and maintain secure communication services, as well as to help providers manage registration and billing.

On the client side, the Bitmask application runs in the background. It acts as a proxy for the same email programs that users are already familiar with. Alternatively, another interface is available that runs in the browser (through a

customised version of Pixelated). Bitmask finds the relevant encryption keys for email addresses automatically, and works across different devices. All data (including the encryption key database and the email itself) is end-to-end encrypted, which means that service providers have no access to the contents. As part of the Panoramix project, anonymous routing capabilities defending against traffic analysis will be added too, providing a greater level of privacy.

Throw your metadata through the Memory Hole

In an email, the data is the content: the letter that you write. The metadata is everything that helps the content be routed to its intended recipient: it is equivalent to the stamp, the envelope and the addresses of the recipient and the sender in a traditional mail.

Conventional email encryption technologies are only concerned with protecting the content of the message. Therefore, the metadata remains visible in transit. Intermediaries who act as postmen can see your address, the recipient, date, subject line and even the path the message took to its destination.

The Memory Hole project aims to fix this problem by stashing metadata in the contents of the e-mail in a standardized way. This means to hide as much metadata as possible inside the “protected” envelope from intermediaries such as service providers or spy agencies.

By implementing this proposed standard, Memory Hole compliant email programs can protect a good amount of metadata from snooping and modification in transit. Look for this feature in the near future!

Autocrypt: Such crypto, much mail

The Autocrypt project develops email encryption that is convenient enough for mass adoption even if it cannot be as secure as traditional email encryption.

The project is driven by a diverse group of mail app developers, hackers and researchers who are willing to take fresh approaches, learn from past mistakes, and thereby increase the overall adoption of encrypted email. Some popular software such as K9 (mobile email app), Enigmail (encryption plugin for the Thunderbird mail reader) or Mailpile (a web interface for email) already support this protocol.

Autocrypt uses regular email messages to exchange the information that allows the encryption of subsequent messages. It adds metadata to the email that stores the encryption keys associated with users, as well as their relevant preferences about encryption behaviour.

The Webmail family: Modern email clients built on web technologies

A webmail interface offers an intuitive user experience. It runs in the browser that is available on any desktop computer. In-browser apps pose some security problems (unverifiable code execution, secrets storage open to a very wide attack surface, etc.) but it also drastically lowers the barrier to adoption.

Mailpile[10] is a self-hosted email service. Its user interface takes advantage of widely supported web standards such as HTML5 and JavaScript. The interface connects to a backend that typically lives on the local device, but may also

run on a server. It supports end-to-end encryption via the traditional OpenPGP standard. The interface emphasises searching and tagging, which makes it a bit similar to the popular Gmail web inferface and sets it apart from most other free software email programs. The Mailpile initiative holds a lot of promise as a modern cross-platform mail client, especially since the Mozilla Foundation stopped supporting the development of its main alternative, the Thunderbird desktop mail reader.

Another interesting open-system webmail approach was Whiteout, which closed in 2015 with more than 10.000 users. Their open source software implemented interoperable protocols. In their post-mortem note they shared some calculations about what a viable market of encrypted messaging apps could look like[11], although the lesson might well be that the model of startup companies is not suitable for tackling the surveillance problem.

Mailvelope[12] might be a suitable option when compromises have to be absolutely made. It is a browser extension that allows you to use OpenPGP email encryption with mainstream webmail providers like Gmail, Yahoo, and Outlook. Popular free software webmail applications like Roundcube (the webmail offered by projects like Riseup or Autistici) also support the Mailvelope plugin[13].

Non-email messaging services

Last, I'd like to mention several initiatives that are gaining traction among users that seek secure email providers, but that cannot be considered as interoperable and encrypted email services. They usually support end-to-end encryption only between users of the same service, and fall

back to unencrypted email for users of other providers. Alternatively, some require that users across providers exchange a shared secret manually – which defeats the purpose of public key cryptography that is the big thing about the OpenPGP standard used by the other projects, and centralizes the ecosystem once again.

Known examples of this category of centralized, non-email services are ProtonMail (a Swiss webmail app that only does encryption between its own users, sending unencrypted email to others) and Tutanota (a webmail interface and mobile app that requires external recipients to decrypt the message on the Tutanota website with a pre-shared secret).

For in-depth reviews of other initiatives, and a nice overview of projects that support email encryption, an extensive comparison is available online[14].

Some remaining challenges

The quest for reducing the interception of our global communications is still ongoing. The challenge is to collectively recover control over the email medium. As shown above, some projects are making good progress. They are adopting new strategies for achieving mass adoption of easy-to-use email encryption.

The promise is that over the coming months better programs for email encryption can work together in a mostly automated way, demanding less user intervention while still ensuring that users can decide who can see their messages while they travel across the internet.

But programs do not get written alone: I encourage you, especially, to try clients like K9, Enigmail, Mailpile and Bit-

mask. Test them out. Try more than one. Try them with your friends, with your family. Engage with their communities, join their mailing lists and IRC channels. Learn more about their strengths and limitations. Report problems when they break, try new versions, write or improve translations to your own language, start hosting a new email provider if you can and above all, continue contributing to the process of collective creation. If you believe in the right to whisper, engage in the global conversation and raise your voice.

Take care! I look forward to reading you securely in the intertubes.

0 There are several different properties that crytographic encryption solutions traditionally aspire to provide. Confidentiality is obtained by encrypting messages, which in plain English means scrabbling them in order to avoid third parties (like a government, corporation or malicious person) to recover the content and read them. Authentication is done by signing the content on one end and verifying the signatures on the other end to make sure that the message was really sent by the claimed author. The way the encryption is done also allows to preserve content integrity, ensuring that no third party could change the message in transit.

1 In the Cold War, the USA and its allies developed an elaborate series of export control regulations designed to prevent a wide range of Western technology from falling into the hands of others, particularly the Soviet bloc. Export controls on encryption became a matter of public debate with the introduction of the personal computer. Zimmermann's PGP and its distribution on the internet in 1991 was considered the first major 'individual level' challenge to cryptography export controls, although ultimately, the popularization of e-commerce probably did play a much bigger role in the outcome. https://en.wikipedia.org/wiki/Crypto_Wars

2 When Snowden first tried to contact the Guardian journalist Glenn Greenwald, cryptography hackers and privacy activists collectively experienced a harsh reality check that punched our little Web of Bubble: no security is

effective without usability. If an NSA analyst is forced to craft awful videos in order to teach a journalist how to install a tool called gpg4win, downloaded from an ugly website, do some scary copy/pastes and other such delights shown in the 12 minute video, we can strongly conclude that the usability, and general state of email encryption is terribly broken. So, more than ten years after the seminal article, we can affirm that sadly,
[Johnny cannot yet encrypt] (https://people.eecs.berkeley.edu/~tygar/papers/Why_Johnny_Cant_Encrypt/OReilly.pdf).

3 In other words: the long death of Jabber/XMPP. It's frustrating how, over and over again, the fragmentation of an open ecosystem leads to centralized solutions. One can understand Signal developer and crypto anarchist Moxie Marlinspike's rants against federation only in terms of the desire of deploying updates to millions of users without waiting for the long tail and the distributed consensus to catch up. In the mobile messaging world Signal is right now the best thing we have, but it still represents a failure of the technosocial processes that prevented the open federation of communication infrastructures from becoming a reality today.

4 And with the phone, the policy of mandatory real-name registration. This practice is enforced by telecommuncations companies on behalf of states that pass anti-anonymity laws.

5 http://codev2.cc/download%2Bremix/Lessig-Codev2.pdf

6 Projects like Pond (https://github.com/agl/pond), Retroshare (http://retroshare.us/) or Secushare (http://secushare.org/) might be good insights into what a post-email secure, distributed standard might look like. Note that the Pond author recommends using the Signal app for practical purposes until his own software is more polished and reviewed.

7 See, for instance The Value of Online Privacy https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2341311 and What is Privacy Worth? https://www.cmu.edu/dietrich/sds/docs/loewenstein/WhatPrivacyWorth.pdf

8 https://github.com/micahflee/trollwot

9 https://downloads.leap.se/publications/cans2016.pdf

10 https://mailpile.is

11 https://tankredhase.com/2015/12/01/whiteout-post-mortem/index.html

12 https://mailvelope.com

13 https://roundcube.net/news/2016/05/22/roundcube-webmail-1.2.0-released

14 https://github.com/OpenTechFund/secure-email

Let's develop peasant computing, let's breed “kittens”

Framasoft + AMIPO



Introduction

In recent years, we have witnessed the widespread concentration of internet practices among a very limited number of online service providers, represented by what is now known as GAFAM (Google Apple Facebook Amazon Microsoft). This centralisation, which is totally contradictory to the origins of the Internet, which was conceived as decentralised and distributed[1], led Tim Berners Lee, the creator of the web, to formulate proposals for the future[2]. So, why should we be concerned about this? Simply because data, and particularly our personal data, are the economic fuel of these major actors, and such an accumulation of information about us gives them immense power, turning us into "products" thanks to their "free" services. The questions this raises are many and complex: generalised surveillance, artificial intelligences fed by "big data", the end of anonymity and private life, brakes on freedom of expression and access to information, censorship or loss of data following the closure of a service… Fortunately, a band of irascible Gauls, meeting around the Association Framasoft[3] is bravely trying to "de-googlize" the Internet[4] and extend this initiative so that we can "retake control"[5].

The dangers

Spying

These services track us everywhere, while claiming to give us a better "user experience". But our behaviour is under constant surveillance. This information can be used to display targeted adverts, but the revelations of the Snowden

case have also shown that Internet giants have been forced to communicate this data (sometimes extremely private: emails from Gmail, photos shared on Facebook, Skype conversations, smartphone locations, etc.) to the authorities. Under the pretence of fighting terrorism, states are able to gather much more intelligence than "Big Brother" could ever have dreamed of.

Privacy

Our data is an extension of ourselves. It tells third-parties where we are, who we are with, our political and sexual orientations, sites we have visited, our favourite recipes, our favourite topics of interest, and so on.

While a single data point is not always sensitive, the loss of large amounts of aggregated data can be dangerous (for example if you browse topics about cancer before subscribing to a life insurance).

Your private life is an essential part of your individuality, and in a world where everything has been digitized (e-books, TV, phones, music, social networks, etc.), it would only take a malicious hacker with access to your smartphone a few minutes to cause you serious harm (taking control of your identity on Facebook, consulting your professional or medical information, making purchases without your authorisation, etc.).

Centralization

The major actors of the Internet have become real giants: Google owns YouTube and Waze, Facebook has acquired WhatsApp and Instagram, Microsoft distributes Skype, etc.

This concentration of actors creates multiple issues: what if Facebook were suddenly shut down? And how could we

browse the Web if Google went down? We rely more and more on services provided by a small group of suppliers. For example, Apple (iPhone), Google (Android) and Microsoft (Windows Phone) dominate almost the entire mobile OS industry.

Furthermore, the size of these actors impedes innovation: it's hard to launch a startup that can match up to Apple or Google (the first and second worldwide market capitalisations, respectively).

Finally, The lack of diversity of the giants means they can track many people who are unaware that there may be alternatives, and it can influence the kind of data you receive (a Google search will produce different results for the term "nuclear power" depending on whether Google considers you to be an environmentalist or pro-nuclear power).

Termination

Web services used on your computer, smartphone, tablets (and other devices) are usually hosted on the "cloud": servers spread across the planet, that host not only your data (emails, pictures, files, etc.), but also the application code.

For your data, this raises the issue of sustainability (what would become of your files if Dropbox were to close tomorrow?) and of your ability to switch easily between services (how would you recover your data from Facebook or Picasa and import it, with all the adjoining comments, into another service?).

For applications, this means that you are completely at the mercy of your service provider when it comes to proliferation of advertisements, changes to the user interface, etc., and that you have hardly any control over the way an application works. It is a "black box" that can exhibit mali-

cious behaviour (sending spam SMS without your knowledge, executing malicious code, and so on).

In short, these companies trap us in gilded cages: gilded yes, but cages nonetheless!

"De-googlize" the Internet

Framasoft, through the "de-googlize" the Internet initiative, wishes to counter these threats to our digital lives by offering free, ethical, decentralised, and solidarity-based services. They are making a list of the most-used proprietary software, linking them to the corresponding free software they offer for those same services[6].

In 2017, around forty online services were offered free to internauts with a view to meeting a variety of needs: cloud-type personal file storage, calendars, contacts, collaborative document editing, video conferencing, cartography, mind mapping, meetings and surveys, distribution lists, social networks, online books, search engines, educational games, project management… the list is long, but "the way is free".

Freedom

The story of the Internet itself is one of free software, and this goes for standards as well as protocols. Its potential and popularity are a cause for envy, and large companies would like nothing better than to control it by imposing closed-source, locked-down, and non-interoperable systems.

For the Internet to stay true to its founding principles, those which have led to its success, users must be able to choose free software. That is to say, software whose source

code remains open and accessible and is covered by a free software license.

Ethics

Framasoft is committed to only using software with “free” source code, promoting an internet that allows exchange and independence.

We oppose the exploitation, surveillance, censorship and the appropriation of data in favour of transparency (probity), clear presentation of a service’s terms of use and a rejection of discrimination.

Framasoft undertakes not to exploit its users’ data, and to promote a fair and open Web.

Solidarity

Through the services we deploy, we promote an economic model based on sharing costs and resources, and providing widespread access.

This model also has an educational aspect because we believe that by documenting ways to setup services, many users will in turn be able to share these resources.

We think that, by not infantilizing users and by sharing responsibility for the use of services, it will be possible to regulate abuse.

Framasoft is thus committed to promoting respect and autonomy for its users (as long as this is reciprocated).

Decentralization

Internet intelligence must remain with each individual player on the network, in a spirit of sharing among peers, to avoid creating Minitel 2.0[7].

To ensure equality for all, whether citizens or businesses, not only is it essential to avoid monopolies, but large organizations must be prevented from grabbing personal or public data.

Using tutorials to explain how to increase the use of free solutions that will allow a fairer Internet, we help to distribute codes and diversify usage.

Framasoft is thus committed to facilitating self-hosting and interoperability, so that its users don't get "locked in".

The K.I.T.T.E.N.S. project

In the light of the success of their "de-googlize" the Internet campaign, Framasoft has seen a vertiginous increase in the number of users of their online services, with a corresponding increase in the work needed to maintain and guarantee those services, without ceasing to propose new ones. The Association, lead by five permanent members, relies largely on donations and does not want to grow beyond "human" size.

To extend the dynamic and encourage the decentralisation of services, Framasoft therefore launched the KITTENS[8] initiative, with the aim of bringing together different structures and initiatives hosting services, data and content in their own way, but respecting a common manifesto and charter[9]. Both documents are collectively written and modified by the members of the collective, to take into account the evolution of the different structures and the technical, social and legal context of data hosting in France.

General policy

The KITTENS collective employs a model of governance

directly inspired by Free Software. Decisions concerning the evolution of the collective and the charter are taken in a collegiate fashion. Like source code, the collective model can be duplicated and modified by whoever wants to adapt it, for example, to specific regional contexts.

Each member is invited to participate in collective decision making by consensus, as far as is possible. In the case of conflicts of opinion, decisions are made by a simple majority vote.

The domain chatons.org is maintained and hosted by Framasoft (as long as that is possible and until the collective decides something else). It is made up of a website, with a list of members, and also a distribution list that enables members to communicate and exchange. They are invited to collaborate in the creation of public content for the site, to inform the public of information relating to KITTENS and its free hosting.

KITTENS has no administrative statutes as it principally consists of a public list which determines the members and a set of documentation to facilitate the exchange of knowledge, capitalisation on good practice, and information sharing.

Any organisation that respects the principles of the current manifesto and the KITTENS charter can propose itself as a member. In order to become a member, the collective must receive contact information for the organisation and at least one member of the organisation must be subscribed to the discussion list. Apart from the discussion and possibly some advice, there may also be a vote by simple majority to decide on the the acceptance of a new organisation into the collective.

One or various members can reserve the right to request the expulsion of another member, so long as the following conditions are met:

- The proposal must be supported by convincing arguments that are shared with all the members;
- It must be accepted by a collective vote, with or without counter arguments.

In awareness of the fact that it is not possible to guarantee respect for all the points in the KITTENS charter without threatening the confidentiality of the personal data held in the member's systems, peer control will de facto be imperfect. The collective therefore relies on trust and on the benevolence of the agreements reached between members.

KITTENS should therefore meet among themselves, respecting each others' points of view, and find good practices and rules for inclusion, for questioning or expelling a member, prioritising respect for fundamental freedoms and the private lives of the users of collective services.

Commitments

Each member, referred to below as a "KITTEN", commits herself to obey the charter that defines the following principles:

Transparency, non-discrimination and protection of personal data.

Honesty is the watchword of these commitments, which seek to establish the reliability of the proposed services and build user trust. The General Use Conditions should be perfectly clear, accessible and non-contradictory with the

KITTENS charter.

The host should implement a transparent user account management policy, without discrimination, whether access is free or paid for. It must respect the jurisdiction of the country in question.

The host commits to allow all users to recover their personal data, encrypted or not, except in the case of particular services based on the the momentary transfer of encrypted personal data.

Openness, economy, protection

The services proposed should meet some technical requirements. Notably, servers should be based on free software solutions. Such software will make the reproducibility of the service possible, without generating additional developments in the structure of the server, or as a contribution to free software.

The use of open formats is obligatory, at least for all data sent to users. This is a clear policy in favour of interoperability. When the use of open formats is impossible, the data should be under a free license and be available for as many operating systems as possible. The sources should be made accessible.

Members of KITTENS commit to respecting the free licenses for the software that they use (which includes mentioning those licenses and referencing the sources).

In ethical terms, sponsoring is acceptable, as is patronage, donations, or having an economic model that consists of demanding payment for some functions or even for the entire service. The economic model of each KITTEN should be clearly expressed on a dedicated page that is easy

for users to consult and understand. Evidently, the economic aspects of the activity of any KITTEN should strictly conform to the legislation of the country in question.

On the other hand, no advertising coming from advertising agencies will be accepted. Likewise, there should be no exploitation of personal data, there will be no monitoring of user activity except for legal and statistical ends, user addresses may not be used for anything other than administrative or technical ends. Statistical tools should be free and meet the Collective's conditions.

Solidarity and dissemination

KITTENS members owe each other assistance and mutual aid, through a discussion list or any other means, including periodic meetings. That is how KITTENS members can progress their services. One of the most effective means for maintaining systematic mutual aid is by contributing to the development of free software tools.

Nevertheless, members should not keep to themselves as that would only satisfy a limited number of people and would create discrimination in access to services. On the contrary, all efforts at communication with the public are encouraged as a way of disseminating free hosting solutions and creating links around the principles defended by the collective. The means should be shared, through trainings, public information sessions, stalls during demonstrations, speeches at conferences, the publication of leaflets, etc.

Neutrality

KITTENS services cannot be hosted by an actor who, by reputation, does not promote the neutrality of the Net. Data packages should be transmitted by KITTENS services wi-

thout discrimination, which means the content, source or destination should not be examined. No communications protocol can be given priority in the way informaiton is distributed. And no data can have its content arbitrarily altered.

The neutrality of KITTENS is therefore a political neutrality, as the convictions of members will be neither examined nor sanctioned, so long as they keep within the framework of current applicable laws.

AMIPO, an experience of a KITTENS construction in Orleans

AMPIRO, ("L'Association de Maintien de l'Informatique Paysanne Orléanaises," the Association for the Maintenance of Computing for Farmers in Orleans) is a part of the French "AMAP" (Association of Organic Agriculturists who provide their fruit and vegetables directly to subscribers), with the idea of finding good bytes in a local association, rather than on the American "supermarket". A "farmer" is defined as anyone who works for self-sufficiency and contributes to developing the environment and the countryside…

Signing up to a local KITTENS initiative starts with bringing together a group of people motivated by the idea of practical reflections about the why of the how. From the first prototypes of services installed on recycled servers behind a decidedly asymmetrical internet uplink (with more download than sending capacity via ADSL[10]), they aim to pass to the "production" phase on servers hosted with ethical providers in synchrony with our base values (Such as ARN[11] in Alsace or Tetaneutral[12] in Toulouse).

That requires setting up a legal entity (in this case, a collegiate association[13], without a president or head office); opening a bank account; organising a launch event to raise funds; creating content to raise awareness and setting up workshops for popular education; agreeing about the technologies used and the services proposed; deciding whether the welcome page of the website should be in http or https; creating the necessary communication and documentation tools; organising the installation and administration of the servers; making sure we are in accordance with the charter, particularly putting in place the necessary safeguards; proposing times and channels for communications in order to respond to user's questions…

The main aim of AMPIRO is to offer a personal cloud service (based on NextCloud) that allows inventories of files, contacts and calendars, for free, with the possibility of having more space by joining the association. The enthusiasm of the collective does not stop there, there may be a VPN (Virtual Private Network[14]), or work on end-to-end encryption, so that we cannot read the data that are trusted to us, in order to be able to propose services to local associations or to accompany cooperative projects in the IT usage.

With our calloused hands, as crude farmers in computing, we wish to plant as many seeds as possible in the heads of our fellows so that little pixelated kittens can run about on free and tree-lined roads.

1 In the first instance, in order to convince CERN that a system of global hypertext was interesting enough for the research centre, this document foreshadows the World Wide Web as we know it today: https://www.w3.org/History/1989/proposal-msw.html

2 https://www.theguardian.com/technology/2017/mar/11/tim-berners-lee-web-inventor-save-internet

3 https://framasoft.org/

4 https://degooglisons-internet.org/

5 https://framabook.org/numerique-reprendre-le-controle/

6 https://degooglisons-internet.org/alternatives

7 Internet libre, ou Minitel 2.0 ? Benjamin Bayart - https://www.youtube.com/watch?v=AoRGoQ76PK8
Minitel was a centralised pre-Internet videotext terminal and service in France: https://en.wikipedia.org/wiki/Minitel

8 The French initiative is called "C.H.A.T.O.N.S." (https://chatons.org/). Chatons means "kittens" in French, and stands for "Collectif des Hébergeurs Alternatifs, Transparents, Ouverts, Neutres et Solidaires" (the Collective of Alternative, Transparent, Neutral and Solidarity-based Hosters). This is translated into English as "K.I.T.T.E.N.S." (Keen Internet Talented Teams Engaged in Network Service). For more information see: https://framagit.org/framasoft/CHATONS/blob/master/docs/Charter-en.md

9 https://chatons.org/en/charte-et-manifeste

10 https://en.wikipedia.org/wiki/Asymmetric_digital_subscriber_line

11 http://arn-fai.net/

12 https://tetaneutral.net/

13 http://www.passerelleco.info/article.php?id_article=103

14 https://en.wikipedia.org/wiki/Virtual_private_network

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www.calafou.org

About Calafou

Calafou is a cooperativist initiative for contributing to the commons based on the renovation and transformation of an old industrial colony near the Anoia river in Catalunya. We started in July 2011, following a year of preparation. Over the course of the next six years we brought life into the ruins, so now it can welcome and accommodate visitors, new homes in a housing cooperative, production cooperatives and other infrastructures for the commons.

Currently Calafou hosts initiatives such as open wood, metal, plastic and textile workshops; a craft brewery; a cooperative kitchen called "The Conquest of Bread"; the "Ecosec" project building mobile dry toilets; the audio production and recording studio "On Air", a workshop for the creation of puppets and design of sets for theater, the collective space of the hacklab for experimentation and development of free digital technologies like 3D printing and book scanning; our media library, our software for the economic management of the project and local web services to organize ourselves; Anarchaserver, a feminist server room; our own FM radio station, etc. Ecological initiatives include soap, compost and bread production based on locally recycled materials, as well as educational activities around efficient stove construction, plastic recycling, and much more during our seasonal open days.

Numerous events have been organised in the recent years to further technological sovereignty, autonomy and self-management: Hackmeeting 2012, Hack the Earth, Extrud_me, Backbone409, Hack the Biblio!, TransHackFem-







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SETMANA DE L' AUTOSUFICIÈNCIA A CALAFOU
28 MARÇ - 1 ABRIL 2013
www.calafou.org
activitats@calafou.org
hack The earth
HACKEJA LA TERRA
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IVII FEBRERO 2013
BLOQUE I CÓMO ROUTEAMOS LOS MEDIOS QUE LLEGAN.
BLOQUE II AUTOGESTIÓN DE LA DIFUSIÓN
LICENCIAS
ANALISIS MEDIOS
DOSSIER PRENSA 1.0
ESTRATEGIA COMUNICATIVA
CALAFOU
3ER ANIVERSARIO CALAFOU
MUSICA EN VIVO
Assabé
PERFOS
DJ's
Kloes beats
Electric
Hibal
SABADO 12 DE JULIO
DE 19HS HASTA EL AMANECER
MAS INFO
WWW.CALAFOU.ORG
calafou@foumachine2: ~
hackafou@calafou:/# freak-support-request -allpeople
========== Bienvenidx!==========
Objetivo:// primer ataque de puesta a punto del espacio del hacklab de calafou
<Propuesta de las tareas a desarrollar>
==>Trabajo de rehabilitación (pintura, electricidad, agua y demas)
==>Diseño y montaje de la infraestructura de red
=> cableado y distribucion de señal de internet
=> servidores de telefonia voip
=> web, mail, etherpad local
Actividades ludicas y servicios:
00.00.00 Djs y proyector abierto
00.00.01 Bar de la ecolonia
00.00.02 Eabotiga de productos locales
00.00.03 Ambito comunitario
00.00.04 Alojamiento en espacio cubierto (traer saco de dormir y tienda para estar mas comodxs)
00.00.05 Desayuno comida y cena (contribucion para los gastos 5 euros)
eth0 Es bienvenido todo hardware que pueda hacer crecer el proyecto:
cable de red, routers, switchs, pcs o partes, periféricos,
kit de rellenado de cartuchos de impresion.
fecha:// del 05/11/11 al 12/11/11
4 ANIVERSARIO CALAFOU
11 DE JULIO
+ INFO: CALAFOU.ORG
CALAFOU
presenta
DESVARIART
oct'15 vol. I
11 de Octubre
Tota la informació en
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FIESTON!!
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MAPA ANIVERSARI TWIN PEAKS
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JARDIN LORENA BOBBIT
PATIO PALETAS
JORNADAS LUDICO/POLITICAS
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estiramientos
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reglas del juego
dinámica de grupo
descanso / comida
puesta en comun
campeonato ping pong
cena
torneo videojuegos
DOMINGO
estiramientos
foto familia
apertura caja sorpresas
descanso / comida
debate opcional
juego de cartas
espectaculo mentalismo
cena y chupitos
comer nuestros famtasmas de manera colectiva y creativa
CALAFOU 8 -9 DIC
LA MONSTRA DE L'ANOIA
MOSTRA DE CINEMA RURAL
8-9 de Juliol
Inscripció de vídeos i fotografies
fins al 17 de Juny
GRPC
GRUP REVOLUCIONARI POPULAR CINEMATOGRÀFIC
HACK THE EARTH 2017
SOBIRANIA TECNOLÒGICA COOPERATIVISME DIY SOFTWARE LLIURE AUTOGESTIÓ
ECONOMIA SOCIAL HARDWARE LLIURE ART PERMACULTURA RECICLATGE
BIOCONSTRUCCIÓ TECNOLOGIES APROPIADES DIWO
CIÈNCIA AUTOGESTIONADA NOVES ESTRUCTURES
15, 16 y 17 d'Abril
+INFO: CALAFOU.ORG
Hack the Earth 2015
CALAFOU
presenta
DESVARIART
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19 DE NOVIEMBRE
2016
http://calafou.org

inist Convergence, Anniversary of the Integral Cooperative of Catalunya, Food Sovereignty Network meeting, Desvariart circus festival. We established solidarity, mutual support, exchange and coordination with a number of groups: Architects Without Borders, the Platform for People Affected by Mortgages (PAH), the Anti-capitalist Platform of Anoia, the Ecoxarxes networks, as well as the Catalan scouts known as Caus and Esplais. We have also enabled research projects (on cooperativism, productive economy, industrial colonies, collective memory) and residences (maziterido smell installation, anarchaserver project space, relearn network meeting, LEAP cryptographic software development meeting). We struggle for a living community around other ways of generating wealth that nurtures its direct environment and where value circulates within exchange and support networks based on the principles of sustainability and solidarity.

While pursuing our strategic goals we also see it as fundamental to continue provide low-cost workshop spaces on an individual or cooperative basis in order to help participants make a living. All these efforts are directed towards bootstrapping cooperatives that can pay for the collectivisation of Calafou, the acquisition of the estate. The much desired economic sovereignty.

Our monthly costs run up to 3500 €, including a ten year hire purchase (installment plan) on the land and buildings, investment in materials for renovation, electricity and water bills. Calafou is not only a project of the people who live there. It is an integral part of a wider network comprised of people and infrastructures that work towards sustainable ways of life aimed at surpassing the capitalist system.

This is why we ask you who already know us, you who hope to visit us some day, you who feel related but for various reasons cannot come, you who won the jackpot or robbed a bank, and all our other potential comrades to support the project.

Thanks a lot!

Thanks for taking this book! Its contents have been prepared by many people in and around Calafou. All profits derived from the sale of this book go to Calafou.

www.calafou.org

You can subscribe to our low traffic public announcements mailing list at:

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Links to book's repositories

Repository including all texts and images of Volume 1 and 2:
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We deserve to have other technologies, something better than what we nowadays call "Information and Communication Technologies". This book deals with its psychological, social, political, ecological and economic costs while it relates experiences to create Technological Sovereignty. The authors bring us closer to other ways of desiring, designing, producing and maintaining technologies. Experiences and initiatives to develop freedom, autonomy and social justice while creating autonomous mobile telephony systems, simultaneous translation networks, leaks platforms, security tools, sovereign algorithms, ethical servers and appropriate technologies among others. The texts are by Alex Hache, Benjamin Cadon, COATI, Carolina, Claudio Agosti, Elleflâne, Framasoft + AMIPO, Ippolita, Kali Kaneko, Loreto Bravo, Maxigas and Margarita Padilla.

Git Repositories
https://sobtec.gitbooks.io/sobtec2/
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